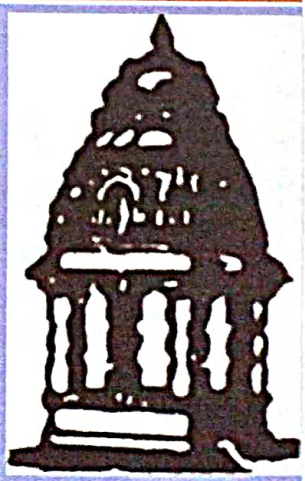
RUDRAPRASAD CONSULTANTS

NAME OF WORK: Improvements to Roads and Drains at Virupakshapura, Bhudha Jyothi Layout, Kodigenahalli , Maruthi Layout and Surrounding Areas in Ward No. 09, Vidyaranyapura

DETAILED PROJECT REPORT

SUBMITTED TO B.B.M.P, BANGALORE



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BRUHAT BENGALURU MAHANAGARA PALIKE

DETAIL PROJECT REPORT

NAME OF WORK : Improvements to Roads and Drains at Virupakshapura, Bhudha Jyothi Layout, Kodigenahalli, Maruthi Layout and Surrounding Areas in Ward No. 09, Vidyaranyapura.

Rudraprasad consultants
No.3, 7th Main,
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INTRODUCTION

CHAPTER – 1

INTRODUCTION

Detailed Project Report

1.1 General

India's pride, Bengaluru is nearly 500 years old and has grown from a small time settlement when KempeGowda, the architect of Bengaluru, built a mud fort in 1537 and his son marked the city boundaries by erecting four watch towers. Bangalore is the capital and the largest city of Karnataka. It is also called "Garden City" for its beautiful gardens, flowers and trees which flourish in each and every street. Bangalore is India's third largest city, fifth most populous city and fifth-most populous urban agglomeration. The majority of the city of Bangalore lies in the Bangalore Urban district of Karnataka and the surrounding rural areas are a part of the Bangalore Rural district. In recent days Bangalore has transformed itself from a "pensioners' paradise" to a modern thriving "cosmopolitan metropolis". Today Bengaluru has grown well beyond those four towers into a sprawling metropolis of more than 6 million people and is referred to as the "Silicon Valley" of India.

As a large and growing metropolis, Bangalore is home to many well-recognized colleges and research institutions in India. Numerous public sector heavy industries, software companies, aerospace, telecommunications, and defence organizations are located in the city. Bangalore is also well known as a hub for India's Information Technology sector. It is among the top 10 preferred entrepreneurial locations in the world. Bangalore is a major economic and cultural hub and the second fastest growing major metropolis in India. Today 35 percent of India's software export is done at Bangalore. Rapid population growth in Bangalore was brought about by the IT and other associated industries, leading to an increase in the population to about 1.5 million, with an annual growth rate of 10-14%.every year.

Bangalore today is obviously one of the most sought after cities in the country with the rapid growth in the IT industry and other associated industries the rise in the number of job opportunities in the city. With the rising population in the city there is also a corresponding increase in the number of vehicles in the city. Bangalore's vehicular traffic has increased manifold, with 1.6 million registered vehicles in the city — the second highest for an Indian city, after New Delhi. Bangalore in particular is that there is very little scope for expansion of

roads and the need to use existing roads for smoothmovement of vehicles is even more pronounced. It thus becomes mandatory for the administration to ensure better parking facilities. With the increase in population and the expansion of the city, the problem of connectivity of the populace has arisen. Quite obviously personalized modes of transport have grown at a tremendous rate and two wheelers along with the cars. The maintenance and construction of roads to address the growing traffic in the city has been a challenge to the BDA and the BBMP. Development of the city road infrastructure has revolved around imposing one-way traffic in certain areas, improving traffic flow in junctions, constructing ring roads, bridges, flyovers and other grade separators.

Bangalore's road network exceeds 3,000 km (1,800 mi) and consists of ring roads, arterial roads, sub-arterial roads and residential streets. The city road network is mainly radial, converging in the centre. Many of Bangalore's erstwhile colonial and town streets were developed into commercial and entertainment areas after independence. The B.V.K Iyengar Road became the retail hub of Bangalore, while MG Road, Commercial Street and Brigade Road became important shopping, recreation and corporate areas. But for MG Road, other roads in and around the erstwhile Parade Ground remain narrow, winding roads. The unplanned nature of growth in the city resulted in massive traffic gridlocks that the municipality attempted to ease by constructing a flyover system and by imposing one-way traffic systems. Some of the flyovers and one-ways mitigated the traffic situation moderately but were unable to adequately address the disproportionate growth of city traffic. Some of the flyovers and one-ways mitigated the traffic situation moderately; however the volume of traffic continues to grow at an annual rate of between 7- 10%. The Outer Ring Road was initially constructed to ease truck congestion in the city; however the growth of suburbs reduced the positive impact of the ring road. BDA is laying additional lanes on many of the major roads around Bangalore. The Peripheral Ring Road is designed to be concentric to the Outer Ring Road and covers 108.9 km. The Hosur Road, which connects Bangalore to the Electronics City, is heavily congested and is part of the National Highway (NH7), therefore witnesses' heavy truck traffic as well.

Export Promotional Industrial Park (EPIP) in Bangalore is the place which entrepreneurs love to be identified with. EPIP is in the just next door of M/s ITPL, an internationally acclaimed technology park promoted by KIADB with TATAs and Singapore consortium of industries.

This park comes with state-of-the-art infrastructure facilities. Following are the few of many features of this prestigious location

- Location in unpolluted, lush green atmosphere, just 17 Kms. from the heart of the city and 9 Kms. from Bangalore Airport.
- Total extent of developed land is 547 acres with well-laid asphalted roads & drainage systems.
- Assured water supply & dedicated power lines with Sodium Vapor street lighting.
- KTPO Exhibition Complex coming up in the area. Hospital with ultra modern facilities and well-equipped inland container depots.
- Well connected with public transport with host of secondary infrastructure facilities like telephones, Posts & Telegraph, Banks, ATMs, Convention center. Cafeterias, Travel operators.

EPIPs are the destination for industrial units who have plans to export at least 33% of their output in value offshore. These parks come with well-planned infrastructure, which is hallmark of KIADB's service. These parks are established with the sanction of Union Govt, of India to give impetus to growth of exports in the state. Government of Karnataka offers host of incentives and concessions to export oriented units.

The Bruhat Bengaluru Mahanagara Palike (BBMP, Greater Bangalore Municipal Corporation vide Government of Karnataka Notification no. UDD 92 MNY dt: 2.11.2006) is in charge of the civic administration of the city. It was formed in 2007 by merging 100 wards of the erstwhile Bangalore Mahanagara Palike, with seven neighbouring City Municipal Councils (Rajarajeshwari Nagara, Dasarahalli, Bommanahalli, Krishnarajapuram, Mahadevapura, Byatarayanapura and Yelahanka), one Town Municipal Council (Kengeri) and 111 villages around Bangalore. The BBMP Is run by a city council composed of 250 members, including 198 corporators representing each of the wards of the city. The BBMP works with the Bangalore Development Authority (BDA) and the Agenda for Bengaluru Infrastructure and Development Task Force (ABIDe) to design and implement civic projects.

The BBMP has taken up an ambitious plan to upgrade Arterial & Sub Arterial Road network in these newly added areas of BBMP and Development, maintenance and management of high quality network in EPIP zone roads at Mahadevapura Zone, where the traffic intensity has increased significantly and to augment the capacity for safe, efficient and free flow of

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traffic. Roads in and around EPIP zones are being upgraded to arterial road standards which will result in enormous increase in the traffic. Tech city, a preferred choice of many global corporations to position their businesses. It has indeed been a challenge to the government agencies including the urban local bodies to meet up with these unprecedented demands and challenges of the global companies and its citizens demanding international class 'citizen services'.

The project consists of improvements to roads and drains, in ward 09 of Byatarayanapura Division, which includes 20 roads. The existing roads need to be improved, since they are not in good condition and to avoid inconvenience to people living in these wards. The total length of all Drains in ward 09 is 1532 m (1.532 Km), the total length of all Asphalt Roads in Ward 09 is 1951.5 m (1.951 Km) & the total length of CC Road in Ward 09 is 104 m (0.104Km). The ward maps in which the respective roads are highlighted are enclosed with this report.

1.2 Topography

Bangalore is situated in the southeast of Karnataka, at an average elevation of 920m above mean sea level. It is positioned at 12.97°N, 77.56°E and covers an area of 2, 190 sq.km. Bangalore Urban District borders with Kolar District in the northeast, Tumkur District in the northwest, Mandya District in the southwest, Chamarajanagar District in the south and the neighboring state of Tamil Nadu in the southeast. The Bangalore Urban District is divided into three taluks; Bangalore North, Bangalore South, and Anekal. The Bangalore North taluk is a relatively level plateau, while the Bangalore South taluk has an uneven landscape with intermingling hills and valleys.

1.3 Project objective

- The main objective of the study is to establish the technical & economical viability of the project roads by rehabilitation, strengthening, asphalting, concrete including culverts and improvements of side drains of the existing roads.
- The detailed project study includes submission of the detailed project report for the project as per standards.

1.4 Outline of the project

The consultant is required to conduct various engineering Surveys, Investigate, Carry out Detailed Design and Viability of the project. **Prepare Detailed Project Report**, based on Detailed Design and Bill of Quantities.

1.5 Contents of Detailed Project Report

This Detailed Project Report is submitted in 8 chapters dealing with different aspect of the study of the project road.

Chapter description

1	Introduction
2	Socio-Economic Profile
3	Description of project
4	Methodology
5	Design Standards
6	Pavement Overlay design
7	Conclusion
8	Cost estimate

DESCRIPTION OF PROJECT ROADS

CHAPTER - 2

DESCRIPTION OF PROJECT ROADS

2.1 General

The project consists of bad roads in Ward No.09, Byatarayanapura Division, which includes 20 roads in. The existing roads need to be improved since there are formation of Cracks, Rutting and Potholes which are a hindrance to the free movement of traffic, in turn causing inconvenience to the people of the respective wards. The total length of all Drains in ward 09 is 1532.0 m (1.532 Km), The total length of all Asphalt Roads in Ward 09 is 1951.5m (1.951Km), & the total length of CC Road in Ward 09 is 104 m (0.104Km). Majority of roads pass through residential and commercial area. Below are the lists of the bad roads in their respective wards.

- **List of Roads**
- **List of Roads in Ward No. 09 (Ganesh Nagara)**
  - 6th Cross Road
  - 7th Cross Road
  - 7th A Cross Road
  - 8th C Cross Road
  - 8th B Cross Road
  - 8th A Cross Road
  - 9th Cross Road
  - 10th Cross Road
  - 11th Cross Road
- **List of Roads in Ward No. 09 (Pillappa Layout)**
  - W0815
- **List of Roads in Ward No. 09 (Maruthi Layout)**
  - 8th Cross Road
  - 8th Cross Road
  - 9th Cross Road
  - 10th Cross Road
  - 7th Cross Road

- **List of Roads in Ward No. 09 (Siddhi Vinayaka Layout)**
  - 4th Main Road
  - Cross Road 1
  - 2nd A Cross Road
  - 2nd Cross Road
  - 5th Main Road

2.2 Existing project roads

2.2.1 Terrain

Terrain is classified by general slope of the country across the alignment, based on this criterion majority of the project roads pass through Plain terrain.

2.2.2 Alignment

The existing roads have the carriage widths varying from 3.3 m to 5.8 m and the existing gradients of the project roads are within acceptable limits as per IRC: 86. Table 1 shows the list of project roads with their carriage way widths.

2.2.3 Climate

Due to its elevation, Bangalore enjoys a pleasant climate throughout the year, with temperatures ranging between 33°C and 16°C, with an average of 24°C. The summer heat is moderated by occasional thunderstorms and squalls. Bangalore receives adequate rainfall of about 860 mm from the Northeast Monsoon as well as the Southwest Monsoon. The wettest months are August, September and October.

2.2.4 Carriageway Width

The existing carriageway width varies from 3.3 m to 5.8 m. Details of carriageway width are as shown in Table 2.1 below,

Table 2.1 - LIST OF ROADS WITH THEIR CARRIAGE WAY WIDTHS

Sl.No	Name of the Road	Carriage Way Width in m
Ward No.09		
Ganesh Nagara		
1.	6th Cross Road	4.0
2.	7th Cross Road	4.3
3.	7th A Cross Road	4.8
4.	8th C Cross Road	5.8
5.	8th B Cross Road	5.5
6.	8th A Cross Road	5.5
7.	9th Cross Road	5.0
8.	10th Cross Road	4.7
9.	11th Cross Road	5.3
Pillappa Layout		
10.	W0815	5.1
Maruthi Layout		
11.	8th Cross Road	5.1
12.	8th Cross Road	3.3
13.	9th Cross Road	4.3
14.	10th Cross Road	4.2
15.	7th Cross Road	4.8
Siddhi Vinayaka Layout		
16.	4th Main Road	4.5
17.	Cross Road 1	5.0
18.	2nd A Cross Road	4.3

19.	2nd Cross Road	3.5
20.	5th Main Road	4.5

2.2.5 Pavement Condition

The existing pavement conditions are analyzed based on visual inspection as per IRC 81-1997 Table -1. The Roads as per the Visual Inspection were found to be in Good to Poor condition. This may be due to improper material in subgrade, compaction or movement of heavily loaded trucks. The summaries of pavement condition obtained by visual inspection are listed in Table 2.2 below.

TABLE 2.2: PAVEMENT CLASSIFICATION BASED ON VISUAL INSPECTION

Sl.No	Name of the Road	Road Condition
Ward No.09		
Ganesh Nagara		
1.	6th Cross Road	Poor
2.	7th Cross Road	Poor
3.	7th A Cross Road	Poor
4.	8th C Cross Road	Poor
5.	8th B Cross Road	Poor
6.	8th A Cross Road	Poor
7.	9th Cross Road	Poor
8.	10th Cross Road	Poor
9.	11th Cross Road	Poor
Pillappa Layout		
10.	W0815	Poor
Maruthi Layout		
11.	8th Cross Road	Poor

12.	8th Cross Road	Poor
13.	9th Cross Road	Poor
14.	10th Cross Road	Poor
15.	7th Cross Road	Poor
Siddhi Vinayaka Layout		
16.	4th Main Road	Poor
17.	Cross Road 1	Poor
18.	2nd A Cross Road	Poor
19.	2nd Cross Road	Poor
20.	5th Main Road	Poor

2.2.6 Land Use along the project highway

Land use along majority of roads is predominantly for built up area. The settlements are used for residential and commercial purposes.

2.3 Traffic flow conditions

Traffic on these project roads is of mixed type. Majority of roads only carry passenger vehicle most of the time, and there are also commercial vehicles ply on some roads. Commercial vehicles include 2-axle and 3-axle trucks and LCVs.

The intensity of traffic on this stretch is likely increase in future, the reason being:

- The Bangalore Mahanagara Palike became Bruhat Bangalore Mahanagara Palike after inclusion of 7 CMC, 1TMC & 111 Villages adjoining to the CMC areas vide Government of Karnataka Notification No. UDD 92 MNY 2006 dated 02.11.2006. To provide better transport facility, to improve the quality of urban civic services better roads are needed. At present the existing roads in these newly added areas are narrow without proper Drainage, Footpath, and Culverts etc. The BBMP has taken up an ambitious plan to upgrade Arterial & Sub Arterial Road network in these newly added areas of BBMP in view of providing better infrastructure.

- Roads in and around EPIP zones are being upgraded to arterial road standards which will result in enormous increase in the traffic.
- The number of commercial and residential plots in the given area is high.
- Rising traffic congestion is one of the key issues in the City. Though the length of roads available is good, the problem lies with the restricted widths.

2.4 Cross Drainage Structures and Side Drains

There are no major CD structures along the project road except for the cross roads. The condition of the existing CD structures is good.

2.5 Utilities

- **HT Lines**
  HT lines do not cross along the project roads
- **Light Poles**
  Large numbers of light poles are present along the project roads in regular intervals

2.6 Trees

The project roads consist of trees beside the carriageway at regular intervals. Also tree pits are constructed for all the trees on either side of the roads for watering the trees. Curb stones are laid all round the tree pits for protection

CONCLUSION

CHAPTER - 3

CONCLUSIONS

3.1 General

The primary data collected from the site provides a clear picture of the site conditions, and also gives us a good insight about the deficiencies and the scope for improvements. The primary data coupled with the good engineering expertise lead us in giving apt and economical recommendations for the improvements. A budget of Rs. 4,75,00,000/- (Rs. Four Crore Seventy Five Lakhs Only) has been allocated for this project. Hence, the provisions of items made in the cost estimate are in consensus with the allocated budget. The improvement proposal includes the following:

3.1.1. Geometric Improvements:

- Improvements of existing carriageway
- Improvements to cross sectional elements
- Improvements to horizontal alignment
- Improvements to longitudinal profile

3.1.2. Strengthening of Existing Pavements:

- Pavement Overlay design
- Road Drainage
- Road Furniture and Appurtenances
- Pedestrian Facilities
- Aesthetics

The summary of improvement proposals along the project roads in Ward no.09 Conforming to Design Standards with all the Relevant Details such as Length and Width of existing roads, Plans and Construction Costs has been prepared. The details of improvement proposals are discussed in subsequent sections.

3.2. Improvement proposal for Carriageway

Since the majority of the roads are Arterial and sub-arterial roads where the Traffic intensity is less than 10msa, Table 3.1 shows the improvement proposals and pavement composition for the existing roads.

TABLE 3.1: IMPROVEMENT PROPOSAL AND PAVEMENT CONDITION DETAILS

FLEXIBLE PAVEMENT

Sl.No	Name of the Road	BC
Ward No.09		
Ganesh Nagara		
1.	6th Cross Road	40
2.	7th Cross Road	40
3.	7th A Cross Road	40
4.	8th C Cross Road	40
5.	8th B Cross Road	40
6.	8th A Cross Road	40
7.	9th Cross Road	40
8.	10th Cross Road	40
9.	11th Cross Road	40
Pillappa Layout		
10.	W0815	40
Maruthi Layout		
11.	8th Cross Road	40
12.	8th Cross Road	40
13.	9th Cross Road	40

14.	10th Cross Road	40
15.	7th Cross Road	40
Siddhi Vinayaka Layout		
16.	4th Main Road	40
17.	Cross Road 1	40
18.	2nd A Cross Road	40
19.	2nd Cross Road	40
20.	5th Main Road	40

RIGID PAVEMENT

Sl.No	Name of the road	PCC	PQC
Ward No.09			
Siddhi Vinayaka Layout			
1	1st Main Road	150	150

3.3. Improvement Proposal for Side Drains

Adequate drainage is a primary requirement for maintaining the structural soundness and functional efficiency of a road in addition to preserving the valuable road assets created. Pavement structure including subgrade must be protected from any ingress of water, otherwise over a period of time it may weaken the sub grade by saturating it and cause distress in the pavement structure. Hence, rapid dispersal of water from pavement and sub grade is a basic consideration in road design. Also, quick drainage takes away the water from pavement's surface and reduces chances of skidding of vehicles.

The requirements of road drainage are essentially based on IRC: SP-42-" Guidelines on Road Drainage" and IRC:SP-50 -"Guidelines on Urban Drainage". Camber of 3.0 is provided for

the carriageway. For longitudinal drains, a minimum longitudinal gradient of 0.3 percent shall be ensured for satisfactory drainage.

3.4. Improvements Related to Utility, Road Furniture and Appurtenances

Utility and Importance of the Road are greatly enhanced by installing Road Furniture and Appurtenances at appropriate locations along the Project Road, which ensures Improved Road Safety. Planning and Design of Road Furniture and Appurtenances are as per the Guidelines stipulated in IRC. Detailing of each of these Components has been done so that to integrate the same with the Road Improvement Scheme.

COST ESTIMATES

CHAPTER - 4

COST ESTIMATES

4.1. Detailed Cost Estimate

Detailed cost estimate for various works listed in "Improvements to Roads and Drains at Virupakshapura, Bhudha Jyothi Layout, Kodigenahalli, Maruthi Layout and Surrounding Areas in Ward No. 09, Vidyaranyapura" has been worked out based on detailed engineering design.

4.2. General

Cost Estimate is an important part of the DPR as it provides vital input to financial evaluation of the project. The cost estimates have been prepared for strengthening of the existing road, repairs and improvements to longitudinal drains, road furniture and appurtenances.

4.3. Basic rates

As part of Detailed Project Report, Rate Analysis of each of the item has been prepared by adopting PW, P & IWTD SR 2018-19, & PW, P & IWTD SR 2021-22 Bangalore Circle. The rates as given in PW, P & IWTD SR are to be enhanced by 6% for additional weight age for the works to be executed under extra ordinary conditions for Bangalore Metropolitan Limits. Items not covered in NHSR / PW, P & IWTD SR have been based on market rates.

4.4. Utility Relocation

Provision of 1.5% of Construction cost is made in the cost estimated for raising and or shifting electric supply lines, telephone lines, OFC lines and other utilities.

4.5. Project Management and Quality Control

Provision of 2.0% of Construction Cost has been made towards Cost of DPR Preparation, PMC and Proof Checking.

4.6. Project Cost

The total project cost for **Preparation of DPR for** "Improvements to Roads at Virupakshapura, Budha Jyothi Layout, Kodigenahalli, Maruthi Layout and Surrounding Areas in ward No.09, (Vidyaranayapura)" is 4,75,00,000.00 and the Detailed Cost Estimate is enclosed.

DETAILED ESTIMATE

Sl No.	Description of work	Unit	Mesurement				Qty.	Rate	Amount
			No.	L	B	D			
34	**Cost of Haulage** Excluding Loading and Unloading Taking output 18 t load and lead 10 km = 180 t.km (PWD SR 2021-22 Vol-III Page No.3, Item No.1.4B)								
	Qty frm Item No-33	**t.Km**		3029.41	1.28		3877.65		
	Total						**3877.65**	**115.50**	**447869.00**
	15Km 7*15	105.00							
	Area Weightage 10%	10.50							
	Total	**115.50**							
								Grand Total	**41560527.00**
								GST Charges (12% of estimated cost)	**4987264.00**
								DPR Charges (1% of estimated cost)	**475000.00**
								Project management And Consultancy Charges(1% of estimated cost)	**475000.00**
								Miscellenious and rounding	**2209.00**
								Total Amount	**47500000.00**
								RUPEES FOUR CRORE SEVENTY FIVE LAKHS ONLY	

CERTIFICATE:

1) The work spot has been inspected and found to be necessary
2) The work spot comes under B.B.M.P
3) The provisions made in the estimate are necessary and minimum
4) The estimate is based on C.S.R of 2018-2019, PWD 2021-2022 Issue Rates and Data Rates.

Assistant Engineer
BBMP

Assistant Executive Engineer
BBMP

ASSISTANT EXECUTIVE ENGINEER
Vidyaranyapura Sub-Division
Bruhath Bengaluru Mahanagara Palike

Executive Engineer
BBMP

ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ವಿದ್ಯಾರಣ್ಯಪುರ ಉಪವಿಭಾಗ
ಬೃ.ಬೆ.ಮ.ಪಾ., ಬೆಂಗಳೂರು

RUDRAPRASAD CONSULTANTS BANGALORE

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DRAFT TENDER SCHEDULE

BRUHAT BANGALORE MAHANAGARA PALIKE

NAME OF WORK:- Improvements to Roads and Drains at Virupakshapura, Bhudha Jyothi Layout Kodigenahalli , Maruthi Layout and Surrounding Areas in Ward No. 09, Vidyaranyapura

DRAFT TENDER SCHEDULE

Item No	Description of Work	Unit	Total Quantity as	Rate as per estimate in Rs.	
				In Figures	In Words
1	Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and lead I By Manual Means B Cement Concrete and as per the directions of the Engineer-in-charge of the work .	Cum	17.35		
2	Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and lead (iii) Dismantling Stone Masonry B Rubble stone masonry in cement mortar.and as per the directions of the Engineer-in-charge of the work .	Cum	22.64		
3	Removing and refixing stone slabs of drains and pointing in CM (1:3) and as per the directions of the Engineer-in-charge of the work .	Sqm	2437.16		
4	Earth work excavation by manual means for drains,canals, waste weir, draft, approach channels, key trenches, foundation of bridges and such simillar works in all kinds of soils , as per drawing and technical specifications. including setting out, shoring, strutting, barricading, caution lights, removal of stumps and other deleterious matter, excavated surface leveled and sides neatly dressed disposing off the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, tools & other appurtenaces required to complete the work. and as per the	Cum	2517.44		
5	Providing granite slabs of selected quality roughly dressed having a size of 7.5cms thick and fixed in cement mortar (1:6) including fixing curing ete., completeand as per the directions of the Engineer-in-charge of the work .	Sqm	1044.50		
6	Providing granite slabs of selected quality roughly dressed havinf a size of 10 cms thick and fixed in cement mortar (1:6) including fixing curing ete., complete.and as per the directions of the Engineer-in-charge of the work .	Sqm	1023.23		
7	Providing and laying in position plain cement concrete Mix 1:3:6 (M10) for levelling course for all works in foundation. Using 40 mm nominal size graded crushed coarse aggregates and fine aggregates as per relevant IS Codes machine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machineries, curing, and all the other appurtenances required to complete the work as per technical specifications. and as per the directions of the Engineer-in-charge of the work .	Cum	261.50		
8	Providing and laying in position Reinforced cement concrete for all Sub structures of building, Irrigation works, Sub structure works of bridges, Drain works & other parallel works from 0.50m to 3.50 m height. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine mixed with super plasticisers, laid in layers, well	Cum	580.56		

Item No	Description of Work	Unit	Total Quantity as	Rate as per estimate in Rs.	
				In Figures	In Words
	Supplying, Fitting and Placing un-coated TMT bar Reinforcement in sub-structure complete as per Drawing and Technical Specifications. and as per the directions of the Engineer-in-charge of the work .	tonne	35.90		
10	Providing and Fixing pre cast covering Slab made out of CC 1:2:4 with 10cm thick and Finishing cutting ,including form work,curing,including cost of all materials, labour,hire charges of machinery,loading,unloading,lead and lift,transportation etc ,copmplete. and as per the directions of the Engineer-in-charge of the work .	Sqm	2631.37		
11	Providing and Fixing pre cast covering Slab 250mm thick made out of CC 1:2:4 and jelly 20mm Down size with steel reinforcement including form work,curing,including cost of alll materials, labour,hire charges of machinery, loading, unloading, lead and lift,transportation etc ,complete.and as per the directions of the Engineer-in-charge of the work .	Sqm	88.68		
12	Providing and laying in position Reinforced cement concrete for all Sub structures of building, Irrigation works, Sub structure works of bridges, Drain works & other parallel works from 0.50m to 3.50 m height. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine mixed with super plasticisers, laid in layers, well compacted using needle vibrators, providing weep holes wherever necesary, including all lead & lifts, cost of all materials of quality, confirming to the requirements of relevant IS codes, labour, Usage charges of machinery, curing and all other appurtenances required to complete the work as per technical specifications. and as per the directions of the Engineer-in-charge of the work .	Cum	232.39		
13	Providing and constructing load bearing wall with Solid Concrete blocks of size 400x150x200mm having block density more than 1800kg/m3 and minimum compressive strength of 4.00 N/mm2 conforming to IS 2185 (Part - I) - 2005 and constructed with CM 1:4 as per IS 2572:2005 including cost of all materials, labour, scaffolding and curing, usage charges of machinery etc complete as per specifications. and as per the directions of the Engineer-in-charge of the work .	Sqm	2714.40		
14	Supplying and fixing M15 grade precast cement concrete 600 x 300 x 150 mm Kerb Stone for Roadway, Sidewalls and gutters fixed with CM 1:3 fixed and finsihed in line as per direction of Engineer in charge. and as per the directions of the Engineer-in-charge of the work .	m	415.00		
15	Painting Two Coats on New Concrete Surfaces Painting two coats after filling the surface with synthetic enamel paint in all shades on new plastered concretesurfaces. and as per the directions of the Engineer-in-charge of the work .	Sqm	145.25		
16	Earth work in surface excavation by mechanical means for lowering & leveling the ground for all works other than foundation in all kinds of soils & upto depth not exceeding 300mm as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, removal of stumps and other deleterious matter including dressing of excavated surfaces, disposing off or levelling the excavated earth or sorting & stacking the selected earth for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, tools, usage of machinery & other appurtenances required to complete the work. In all kinds of soils upto 300 mm depth. and as per the directions of the Engineer-in-charge of the	Cum	405.42		

Item No	Description of Work	Unit	Total Quantity as	Rate as per estimate in Rs.	
				In Figures	In Words
	Scarifying the existing bituminous road surface to a depth of 50 mm and disposal of scarified material by Mechanical Means using Hydraulic excavator with in all lifts and lead MORTH Specification and as per the directions of the Engineer-in-charge of the work .	Sqm	7106.32		
18	Compaction of original ground by mechanical means including filling in depression occuring during rolling including cost of all labour, HOM complete as per specifications. and as per the directions of the Engineer-in-charge of the work .	Sqm	7281.32		
19	Construction of Granular Sub-Base of required grading as per design mixing in a mechanical mix plant at OMC, carriageof mixed Material to work site, spreading in uniform layers with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, and as per the directions of the Engineer-in-charge of the work .	Cum	26.25		
20	Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver/grader in sub-base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density and as per the directions of the Engineer-in-charge of the work .	Cum	1980.35		
21	Cleaning the existing WBM Road surface including removing of binding materials and other foreign matter with wire brushes and small picks sweeping with brooms or soft brushes and finally dusting with old gunny bags and bar or compressed air to receive bituminous treatment including cost of all materials, labhour, HOM of machineries complet and as per the directions of the Engineer-in-charge of the work .	Sqm	8610.20		
22	Providing and applying primer coat with SS1 grade Bitumen Emulsion on prepared surface of granular base including cleaning of road surface and spraying primer at the rate of 0.90 kg per m2 using mechanical means and as per the directions of the Engineer-in-charge of the work .	Sqm	9036.65		
23	Providing and laying Dense Graded Bituminous Macadam with 40/60 TPH capacity HMP using crushed aggregates of specified grading, premixed with bituminous binder VG-30, @ 4.5 per cent by weight of total mix and filler, transporting the hot mix to work site, laying with mechanical paver finisher to the required grade, level and alignment, rolling with smooth	Cum	451.83		
24	Cleaning the existing black topped surface with brooms,soft brushes and finally dusting with old gunny bags and/or compressed air to receive bituminous treatment including cost of all materials,labhour, HOM of machineries complete as per specifications.and as per the directions of the Engineer-in-charge of the work .	Sqm	9413.57		
25	Providing and applying tack coat with RS1 Bituminous Emulsion using emulsion pressure distributor at the rate of 0.25 kg/m2 on the prepared bituminous surface cleaned with mechanical broom MORTH Specification and as per the directions of the Engineer-in-charge of the work .	Sqm	9413.57		

Item No	Description of Work	Unit	Total Quantity as	Rate as per estimate in Rs.	
				In Figures	In Words
26	Providing and laying Bituminous Concrete with 40/60 TPH capacity hot mix plant using crushed aggregates of specified grading, premixed with bituminous binder VG-30, @ 5.4 percent of mix and filler, transporting the hot mix to work site, laying with mechanical paver finisher to the required grade,level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction	Cum	376.54		
27	Road Marking with Hot Applied Thermoplastic Compound with Reflectorising Glass Beads on Bituminous Surface Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250 g/ m2 area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35:2015.The finished surface to be level, uniform and free from streaks and holes. and as per the directions of the Engineer-in-charge of the work .	Sqm	390.30		
28	Dismantling of cement concrete pavement by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 m3 in volume and stock piling at designated locations and disposal of dismantled materials and stacking serviceable and unserviceable materials separatelyand as per the directions of the Engineer-in-charge of the work .	Cum	66.56		
29	Construction of dry lean cement concrete Sub- base over a prepared sub-grade with coarse and fine aggregate conforming to IS: 383, the size of coarse aggregate not exceeding 25 mm,aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per table 600-1, cement content not to be less than 150 kg/ m3 , optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a paver with electronic sensor, compacting with 8-10 t vibratory roller, finishing and curing. and as per the directions of the Engineer-in-charge of the work .	Cum	49.92		
30	Providing and constructing un-reinforced plain cement concrete pavement, thickness as per design, over a prepared sub base, with 43 grade cement or any other type as per Clause 1501.2.2 M30 (Grade), coarse and fine aggregates conforming to IS:383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a concrete mixer of not less than 0.2 cum capacity and appropriate weigh batcher using approved mix design, laid in approved fixed side formwork (steel channel, laying and fixing of 125 micron thick polythene film, wedges, steel plates including levelling the formwork as per drawing), spreading the concrete with shovels, rakes, compacted using needle, screed and plate vibrators and finished in continuous operation including construction joints, , primer, sealant , curing of concrete slabs for 14- days, and water finishing to lines and grade as per drawing and technical specification clause 1501 with all lead, lifts, loading & unloading charges, cost and conveyance of all materials, labour, equipments etc., complete MORTH Specification No.1501 . as per the directions of the Engineer-in-charge of the work. (PWD SR 2021-22 Vol -III Pg 138 item no 20.29)	Cum	49.92		
31	Cutting transverse contraction joints 3 to 4 mm wide and depth 60mm in concrete slab using concrete cutting machine with diamond studded saw within 48 hours of casting of bay / slab etc. complete including subsequent widening of the groove 8 to 10 mm. wide at top having depth of 15 mm. as directed by Engineer incharge. and as per the directions of the Engineer-in-charge of the work .	m	86.40		

Item No	Description of Work	Unit	Total Quantity as	Rate as per estimate in Rs.	
				In Figures	In Words
32	Providing to contraction joints polysuphide sealent (Pouring grade) confirming to BS : 5212 - 1989 into sawed groove widened at top for sealent reservoir of specified size and shape as per detailed drawing including fixing Polyethylene foam backer rod of required diameter (approx. 25% larger than the initial 3 mm.to 4 mm. joint) overlaid with bond breaking tape as per detailed drawing. Item includes cleaning the joints with water jet / air compressor and allowing joint to become thoroughly dry before sealent is applied and applying primer. (A) Contraction and longitudinal joints (15 mm. deep x 8mm.wide). and as per the directions of the Engineer-in-charge of the work .	m	86.40		
33	Loading and Unloading of Stone Boulder/Stone aggregates/ Sand Kankar/Moorum. and as per the directions of the Engineer-in-charge of the work .	Cum	3029.41		
34	Cost of Haulage Excluding Loading and Unloading Taking output 18 t load and lead 10 km = 180 t.km and as per the directions of the Engineer-in-charge of the work .	t.Km	3877.65		

"NO CORRECTION NIL"

"DTS APPROVED"

Executive Engineer
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BILL OF QUANTITIES

BRUHAT BANGALORE MAHANAGARA PALIKE

NAME OF WORK:- Improvements to Roads and Drains at Virupakshapura, Bhudha Jyothi Layout Kodigenahalli , Maruthi Layout and Surrounding Areas in Ward No. 09, Vidyaranyapura

BILL OF QUANTITIES

Item No	Description of Work	Unit	Total Quantity as	Rate as per estimate in Rs.	
				In Figures	In Words
1	Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and lead I By Manual Means B Cement Concrete and as per the directions of the Engineer-in-charge of the work .	Cum	17.35	804.10	Rupees Eight Hundred Four and Ten Paise Only
2	Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and lead (iii) Dismantling Stone Masonry B Rubble stone masonry in cement mortar.and as per the directions of the Engineer-in-charge of the work .	Cum	22.64	529.10	Rupees Five Hundred Twenty Nine and Ten Paise Only
3	Removing and refixing stone slabs of drains and pointing in CM (1:3) and as per the directions of the Engineer-in-charge of the work .	Sqm	2437.16	111.30	Rupees One Hundred Eleven and Thirty Paise Only
4	Earth work excavation by manual means for drains,canals, waste weir, draft, approach channels, key trenches, foundation of bridges and such simillar works in all kinds of soils , as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, removal of stumps and other deleterious matter, excavated surface leveled and sides neatly dressed disposing off the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, tools & other appurtenaces required to complete the work. and as per the directions of the Engineer-in-charge of the work .	Cum	2517.44	204.60	Rupees Two Hundred Four and Sixty Paise Only
5	Providing granite slabs of selected quality roughly dressed having a size of 7.5cms thick and fixed in cement mortar (1:6) including fixing curing ete., completeand as per the directions of the Engineer-in-charge of the work .	Sqm	1044.50	742.00	Rupees Seven Hundred Forty Two Only
6	Providing granite slabs of selected quality roughly dressed havinf a size of 10 cms thick and fixed in cement mortar (1:6) including fixing curing ete., complete.and as per the directions of the Engineer-in-charge of the work .	Sqm	1023.23	966.72	Rupees Nine Hundred Sixty Six and Seventy Two Paise Only
7	Providing and laying in position plain cement concrete Mix 1:3:6 (M10) for levelling course for all works in foundation. Using 40 mm nominal size graded crushed coarse aggregates and fine aggregates as per relevant IS Codes machine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machineries, curing, and all the other appurtenances required to complete the work as per technical specifications, and as per the directions of the Engineer-in-charge of the work .	Cum	261.50	6327.20	Rupees Six Thousand Three Hundred Twenty Seven and Twenty Paise Only

Item No	Description of Work	Unit	Total Quantity as	Rate as per estimate in Rs.	
				In Figures	In Words
8	Providing and laying in position Reinforced cement concrete for all Sub structures of building, Irrigation works, Sub structure works of bridges, Drain works & other parallel works from 0.50m to 3.50 m height. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine mixed with super plasticisers, laid in layers, well compacted using needle vibrators, providing weep holes wherever necesary, including all lead & lifts, cost of all materials of quality, confirming to the requirements of relevant IS codes, labour, Usage charges of machinery, curing and all other appurtenances required to complete the work as per technical specifications. M20 and as per the directions of the Engineer-in-charge of the work .	Cum	580.56	7225.68	Rupees Seven Thousand Two Hundred Twenty Five and Sixty Eight Paise Only
9	Supplying, Fitting and Placing un-coated TMT bar Reinforcement in sub-structure complete as per Drawing and Technical Specifications. and as per the directions of the Engineer-in-charge of the work .	tonne	35.90	113661.90	Rupees One lakh Thirteen Thousand Six Hundred Sixty One and Ninety Paise Only
10	Providing and Fixing pre cast covering Slab made out of CC 1:2:4 with 10cm thick and Finishing cutting ,including form work,curing,including cost of all materials, labour,hire charges of machinery,loading,unloading,lead and lift,transportation etc ,copmplete. and as per the directions of the Engineer-in-charge of the work .	Sqm	2631.37	2337.00	Rupees Two Thousand Three Hundred Thirty Seven Only
11	Providing and Fixing pre cast covering Slab 250mm thick made out of CC 1:2:4 and jelly 20mm Down size with steel reinforcement including form work,curing,including cost of alll materials, labour,hire charges of machinery, loading, unloading, lead and lift.transportation etc ,complete.and as per the directions of the Engineer-in-charge of the work .	Sqm	88.68	5418.00	Rupees Five Thousand Four Hundred Eighteen Only
12	Providing and laying in position Reinforced cement concrete for all Sub structures of building, Irrigation works, Sub structure works of bridges, Drain works & other parallel works from 0.50m to 3.50 m height. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine mixed with super plasticisers, laid in layers, well compacted using needle vibrators, providing weep holes wherever necesary, including all lead & lifts, cost of all materials of quality, confirming to the requirements of relevant IS codes, labour, Usage charges of machinery, curing and all other appurtenances required to complete the work as per technical specifications. and as per the directions of the Engineer-in-charge of the work .	Cum	232.39	6705.60	Rupees Six Thousand Seven Hundred Five and Sixty Paise Only
13	Providing and constructing load bearing wall with Solid Concrete blocks of size 400x150x200mm having block density more than 1800kg/m3 and minimum compressive strength of 4.00 N/mm2 conforming to IS 2185 (Part - I) - 2005 and constructed with CM 1:4 as per IS 2572:2005 including cost of all materials, labour, scaffolding and curing, usage charges of machinery etc complete as per specifications. and as per the directions of the Engineer-in-charge of the work .	Sqm	2714.40	1173.70	Rupees One Thousand One Hundred Seventy Three and Seventy Paise Only
14	Supplying and fixing M15 grade precast cement concrete 600 x 300 x 150 mm Kerb Stone for Roadway, Sidewalls and gutters fixed with CM 1:3 fixed and finsihed in line as per direction of Engineer in charge. and as per the directions of the Engineer-in-charge of the work .	m	415.00	465.30	Rupees Four Hundred Sixty Five and Thirty Paise Only
15	Painting Two Coats on New Concrete Surfaces Painting two coats after filling the surface with synthetic enamel paint in all shades on new plastered concretesurfaces. and as per the directions of the Engineer-in-charge of the work .	Sqm	145.25	93.50	Rupees Ninety Three and Fifty Paise Only

Item No	Description of Work	Unit	Total Quantity as	Rate as per estimate in Rs.	
				In Figures	In Words
16	Earth work in surface excavation by mechanical means for lowering & leveling the ground for all works other than foundation in all kinds of soils & upto depth not exceeding 300mm as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, removal of stumps and other deleterious matter including dressing of excavated surfaces, disposing off or levelling the excavated earth or sorting & stacking the selected earth for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, tools, usage of machinery & other appurtenances required to complete the work. In all kinds of soils upto 300 mm depth. and as per the directions of the Engineer-in-charge of the work.	Cum	405.42	71.50	Rupees Seventy One and Fifty Paise Only
17	Scarifying the existing bituminous road surface to a depth of 50 mm and disposal of scarified material by Mechanical Means using Hydraulic excavator with in all lifts and lead MORTH Specification and as per the directions of the Engineer-in-charge of the work .	Sqm	7106.32	4.40	Rupees Four and Forty Paise Only
18	Compaction of original ground by mechanical means including filling in depression occuring during rolling including cost of all labour, HOM complete as per specifications. and as per the directions of the Engineer-in-charge of the work .	Sqm	7281.32	6.36	Rupees Six and Thirty Six Paise Only
19	Construction of Granular Sub-Base of required grading as per design mixing in a mechanical mix plant at OMC, carriageof mixed Material to work site, spreading in uniform layers with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, and as per the directions of the Engineer-in-charge of the work .	Cum	26.25	2581.70	Rupees Two Thousand Five Hundred Eighty One and Seventy Paise Only
20	Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver/grader in sub-base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density and as per the directions of the Engineer-in-charge of the work .	Cum	1980.35	2633.40	Rupees Two Thousand Six Hundred Thirty Three and Forty Paise Only
21	Cleaning the existing WBM Road surface including removing of binding materials and other foreign matter with wire brushes and small picks sweeping with brooms or soft brushes and finally dusting with old gunny bags and bar or compressed air to receive bituminous treatment including cost of all materials, labhour, HOM of machineries complet and as per the directions of the Engineer-in-charge of the work .	Sqm	8610.20	22.26	Rupees Twenty Two and Twenty Six Paise Only
22	Providing and applying primer coat with SS1 grade Bitumen Emulsion on prepared surface of granular base including cleaning of road surface and spraying primer at the rate of 0.90 kg per m2 using mechanical means and as per the directions of the Engineer-in-charge of the work .	Sqm	9036.65	48.40	Rupees Forty Eight and Forty Paise Only
23	Providing and laying Dense Graded Bituminous Macadam with 40/60 TPH capacity HMP using crushed aggregates of specified grading, premixed with bituminous binder VG-30, @ 4.5 per cent by weight of total mix and filler, transporting the hot mix to work site, laying with mechanical paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per and as per the directions of the Engineer-in-charge of the work .	Cum	451.83	10877.90	Rupees Ten Thousand Eight Hundred Seventy Seven and Ninety Paise Only

Item No	Description of Work	Unit	Total Quantity as	Rate as per estimate in Rs.	
				In Figures	In Words
24	Cleaning the existing black topped surface with brooms,soft brushes and finally dusting with old gunny bags and/or compressed air to receive bituminous treatment including cost of all materials,labhour, HOM of machineries complete as per specifications.and as per the directions of the Engineer-in-charge of the work .	Sqm	9413.57	5.30	Rupees Five and Thirty Paise Only
25	Providing and applying tack coat with RS1 Bituminous Emulsion using emulsion pressure distributor at the rate of 0.25 kg/m2 on the prepared bituminous surface cleaned with mechanical broom MORTH Specification and as per the directions of the Engineer-in-charge of the work .	Sqm	9413.57	16.50	Rupees Sixteen and Fifty Paise Only
26	Providing and laying Bituminous Concrete with 40/60 TPH capacity hot mix plant using crushed aggregates of specified grading, premixed with bituminous binder VG-30, @ 5.4 percent of mix and filler, transporting the hot mix to work site, laying with mechanical paver finisher to the required grade,level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification and as per the directions of the Engineer-in-charge of the work .	Cum	376.54	12684.10	Rupees Twelve Thousand Six Hundred Eighty Four and Ten Paise Only
27	Road Marking with Hot Applied Thermoplastic Compound with Reflectorising Glass Beads on Bituminous Surface Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250 g/ m2 area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35:2015.The finished surface to be level, uniform and free from streaks and holes. and as per the directions of the Engineer-in-charge of the work .	Sqm	390.30	525.80	Rupees Five Hundred Twenty Five and Eighty Paise Only
28	Dismantling of cement concrete pavement by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 m3 in volume and stock piling at designated locations and disposal of dismantled materials and stacking serviceable and unserviceable materials separatelyand as per the directions of the Engineer-in-charge of the work .	Cum	66.56	464.20	Rupees Four Hundred Sixty Four and Twenty Paise Only
29	Construction of dry lean cement concrete Sub- base over a prepared sub-grade with coarse and fine aggregate conforming to IS: 383, the size of coarse aggregate not exceeding 25 mm,aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per table 600-1, cement content not to be less than 150 kg/ m3 , optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a paver with electronic sensor, compacting with 8-10 t vibratory roller, finishing and curing. and as per the directions of the Engineer-in-charge of the work .	Cum	49.92	4615.60	Rupees Four Thousand Six Hundred Fifteen and Sixty Paise Only

Item No	Description	Unit	Total Quantity as	Rate as per estimate in Rs.	
				In Figures	In Words
30	Providing and constructing un-reinforced plain cement concrete pavement, thickness as per design, over a prepared sub base, with 43 grade cement or any other type as per Clause 1501.2.2 M30 (Grade), coarse and fine aggregates conforming to IS:383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a concrete mixer of not less than 0.2 cum capacity and appropriate weigh batcher using approved mix design, laid in approved fixed side formwork (steel channel, laying and fixing of 125 micron thick polythene film, wedges, steel plates including levelling the formwork as per drawing), spreading the concrete with shovels, rakes, compacted using needle, screed and plate vibrators and finished in continuous operation including construction joints, , primer, sealant , curing of concrete slabs for 14- days, and water finishing to lines and grade as per drawing and technical specification clause 1501 with all lead, lifts, loading & unloading charges, cost and conveyance of all materials, labour, equipments etc., complete MORTH Specification No.1501 . as per the directions of the Engineer-in-charge of the work. (PWD SR 2021-22 Vol -III Pg 138 item no 20.29)	Cum	49.92	7520.70	Rupees Seven Thousand Five Hundred Twenty and Seventy Paise Only
31	Cutting transverse contraction joints 3 to 4 mm wide and depth 60mm in concrete slab using concrete cutting machine with diamond studded saw within 48 hours of casting of bay / slab etc. complete including subsequent widening of the groove 8 to 10 mm. wide at top having depth of 15 mm. as directed by Engineer incharge. and as per the directions of the Engineer-in-charge of the work .	m	86.40	77.00	Rupees Seventy Seven Only
32	Providing to contraction joints polysuphide sealent (Pouring grade) confirming to BS : 5212 - 1989 into sawed groove widened at top for sealent reservoir of specified size and shape as per detailed drawing including fixing Polyethylene foam backer rod of required diameter (approx. 25% larger than the initial 3 mm.to 4 mm. joint) overlaid with bond breaking tape as per detailed drawing. Item includes cleaning the joints with water jet / air compressor and allowing joint to become thoroughly dry before sealent is applied and applying primer. (A) Contraction and longitudinal joints (15 mm. deep x 8mm.wide). and as per the directions of the Engineer-in-charge of the work .	m	86.40	181.50	Rupees One Hundred Eighty One and Fifty Paise Only
33	Loading and Unloading of Stone Boulder/Stone aggregates/ Sand/Kankar/Moorum. and as per the directions of the Engineer-in-charge of the work .	Cum	3029.41	81.40	Rupees Eighty One and Forty Paise Only
34	Cost of Haulage Excluding Loading and Unloading Taking output 18 t load and lead 10 km = 180 t.km and as per the directions of the Engineer-in-charge of the work .	t.Km	3877.65	115.50	Rupees One Hundred Fifteen and Fifty Paise Only

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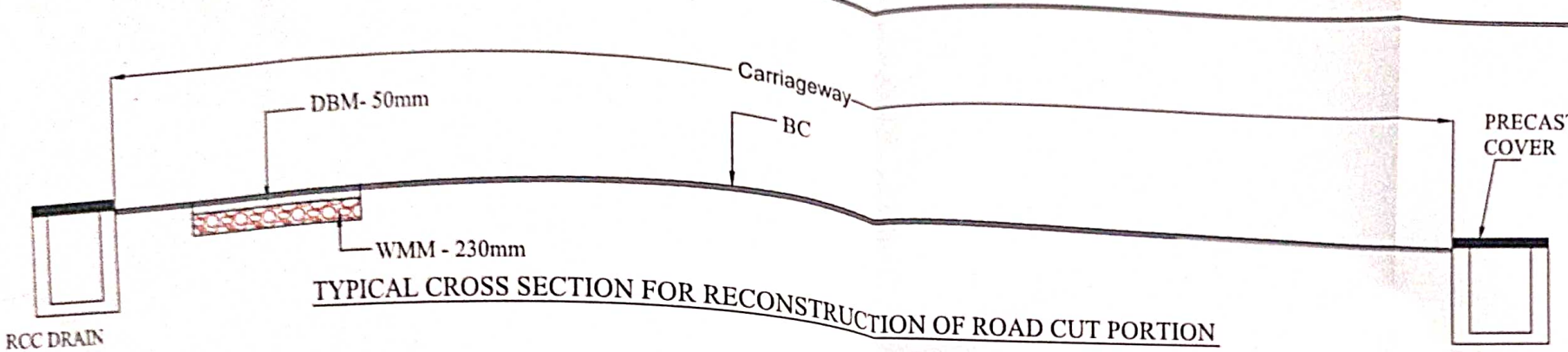
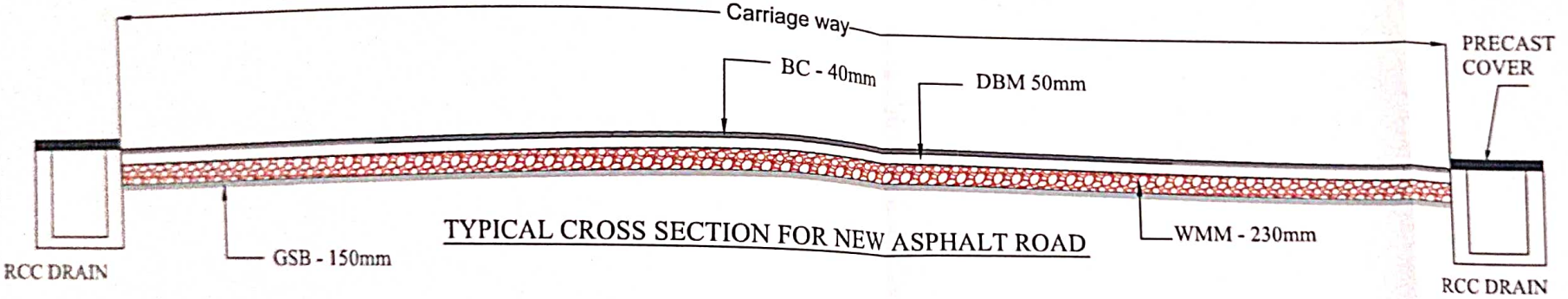
ANNEXURES

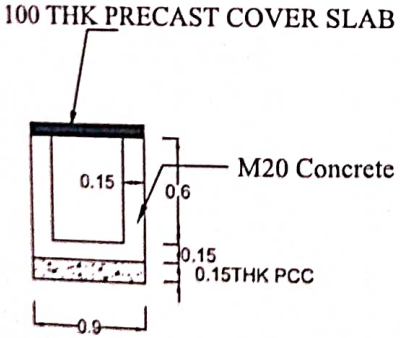
TYPICAL CROSS SECTION



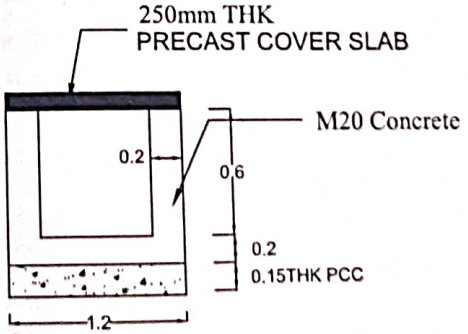
TYPICAL CROSS SECTION FOR RECONSTRUCTION OF ROAD CUT PORTION



TYPICAL CROSS SECTION FOR NEW ASPHALT ROAD



TYPICAL CROSS SECTION OF RCC DRAIN



TYPICAL CROSS SECTION OF CULVERT

ASSISTANT EXECUTIVE ENGINEER
Vidyaranyapura Sub-Division
Bruhath Bengaluru Mahanagara Palike

1) Do Not Scale The drawing
2) All the Dimensions Are In MM

RUDRAPRASAD CONSULTANTS
STRUCTURAL ENGINEERS, ARCHITECTS & PROJECT MANAGEMENT CONSULTANTS

REV No	REV DATE	REMARKS

PROJECT: Improvements to Roads and Drains of Vinayakapura, Bhadra Jyothi Layout, Kodigehalli, Maruthi Layout and Surrounding Areas in Ward No. 89, Vidyaranyapura

CLIENT: B.B.M.P

TITLE: TYPICAL CROSS SECTION OF ASPHALT ROAD

DESIGN: R. KARTHIK REDHAN

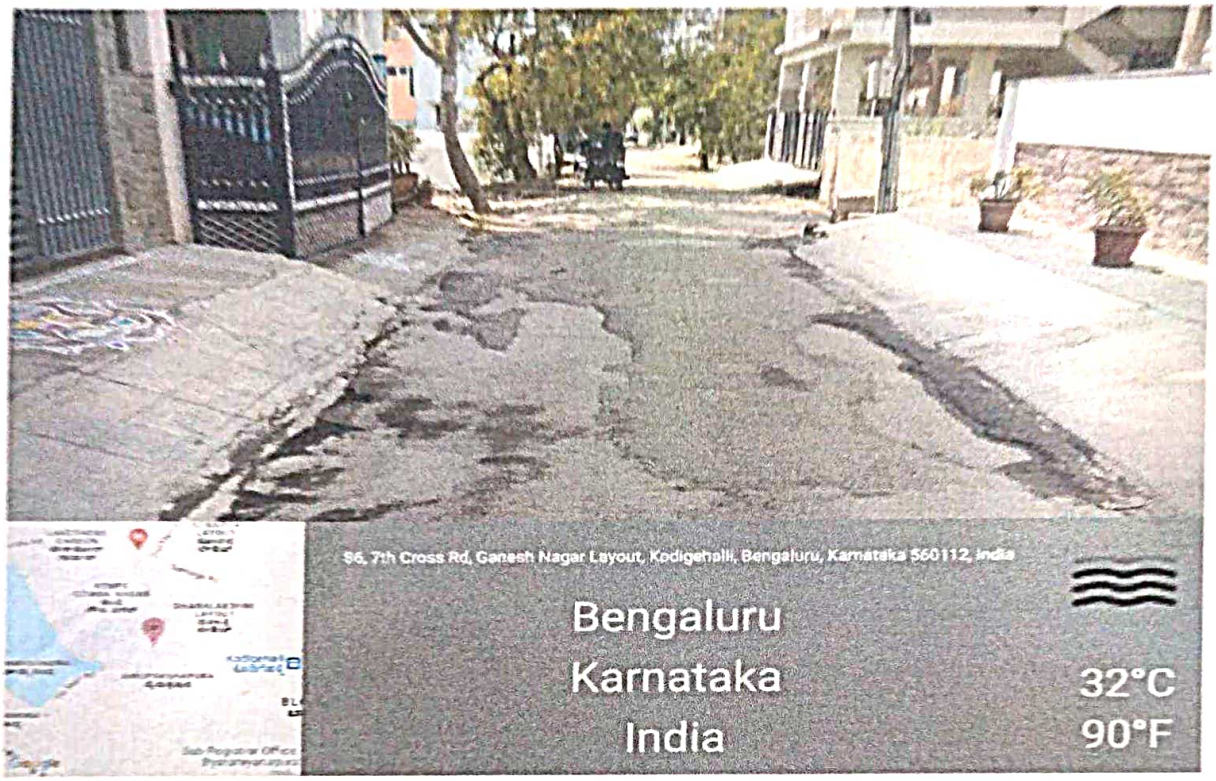
CHECKED: R. RUDRAPRASAD

DRAWN: ARUNAKSHI.P

SCALE: N.T.S | REV. R0

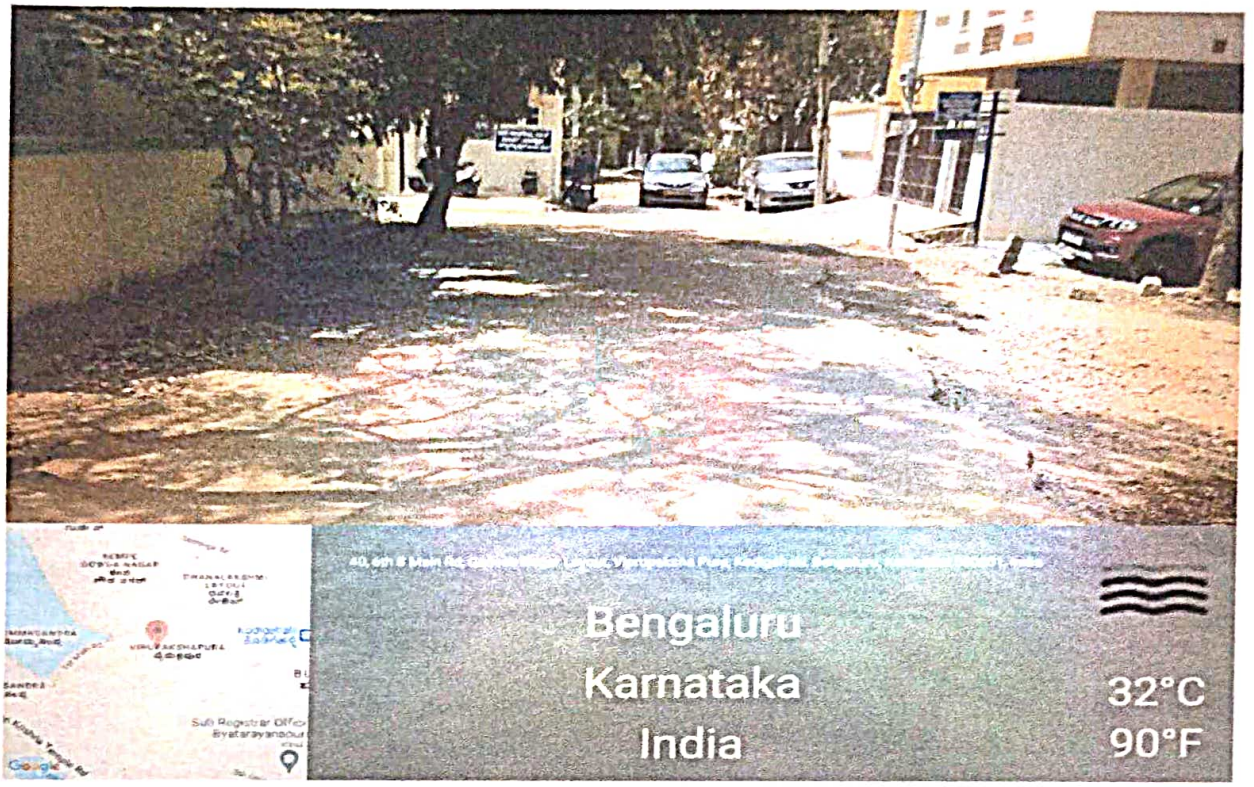
ROAD PHOTOGRAPHS

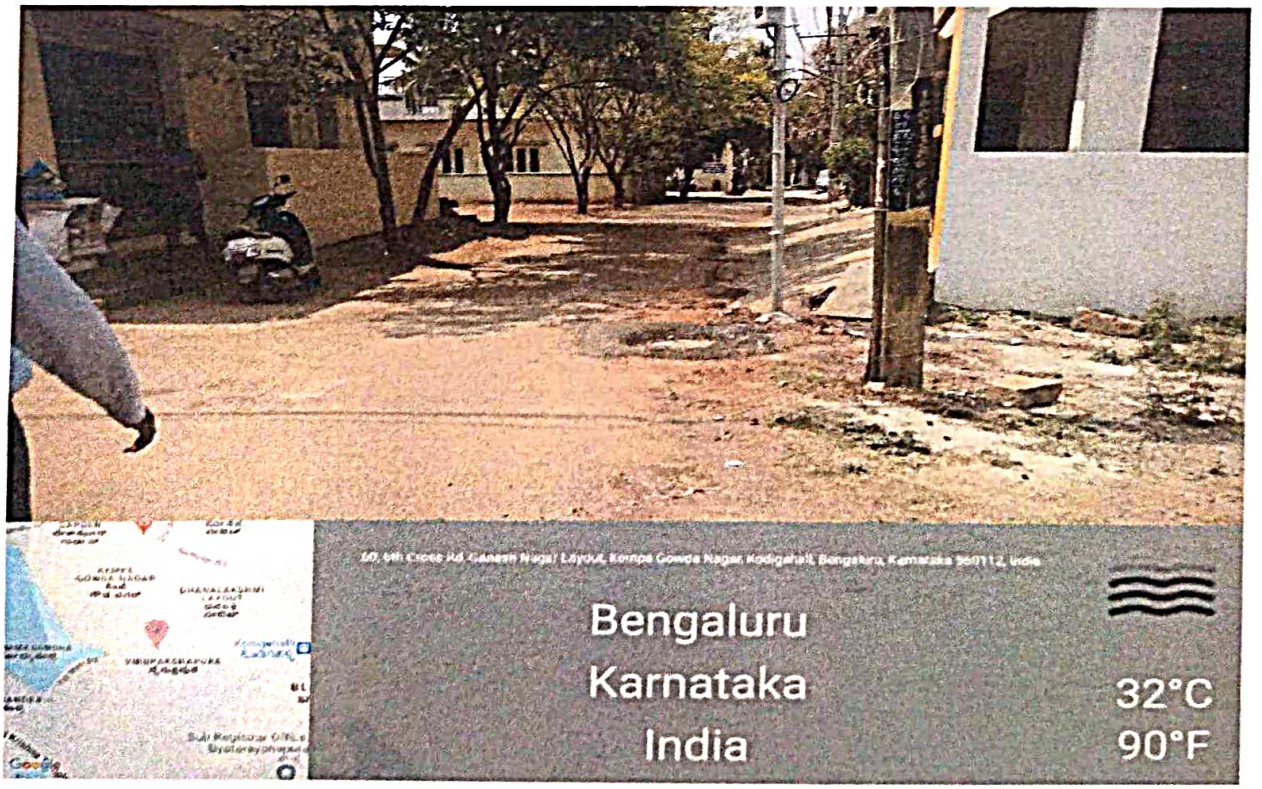
Name of Work : *Improvements to Roads and Drains at Virupakshapura, Budha Jyothi Layout, Kodigenahalli, Maruthi Layout and Surrounding Areas in Ward No.09, Vidyaranyapura.*



BUDHA PRASAD CONSULTANTS
BANGALORE

Name of Work : *Improvements to Roads and Drains at Virupakshapura, Budha Jyothi Layout, Kodigenahalli, Maruthi Layout and Surrounding Areas in Ward No.09, Vidyaranayapura.*





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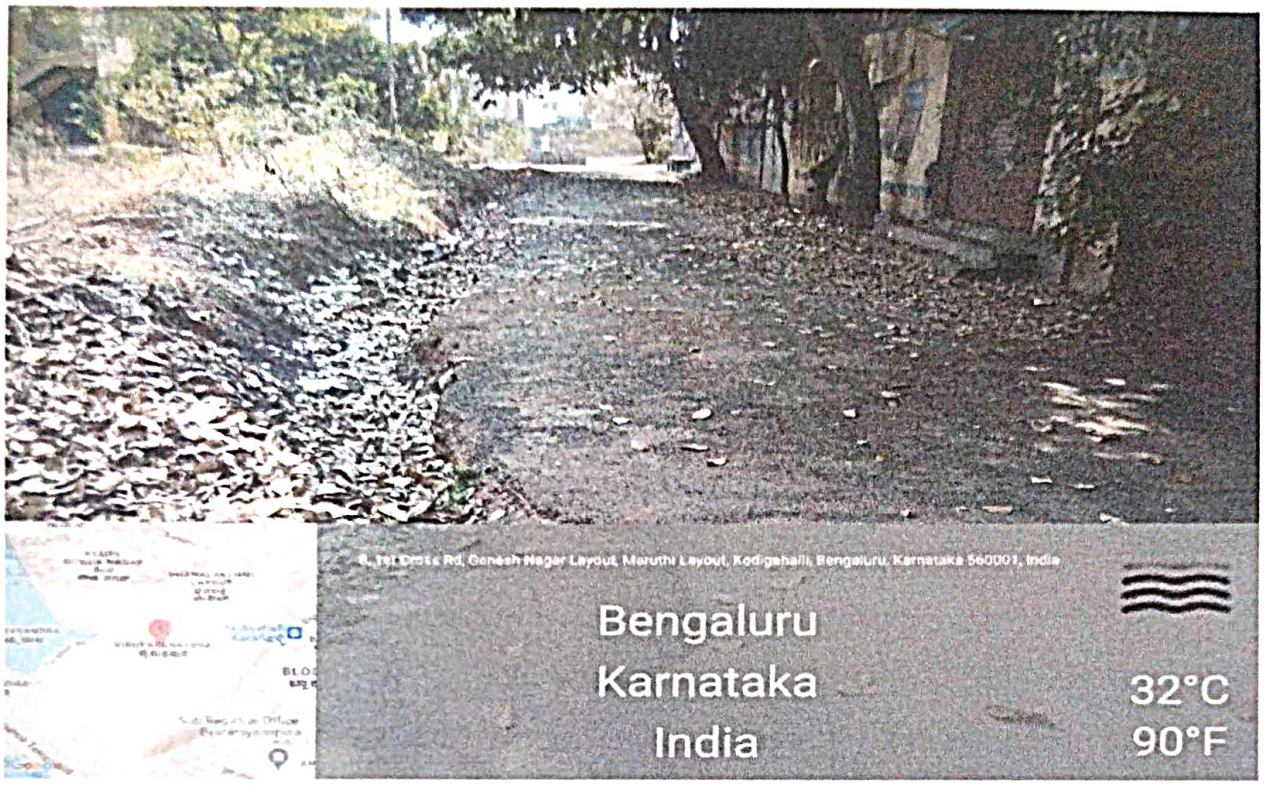
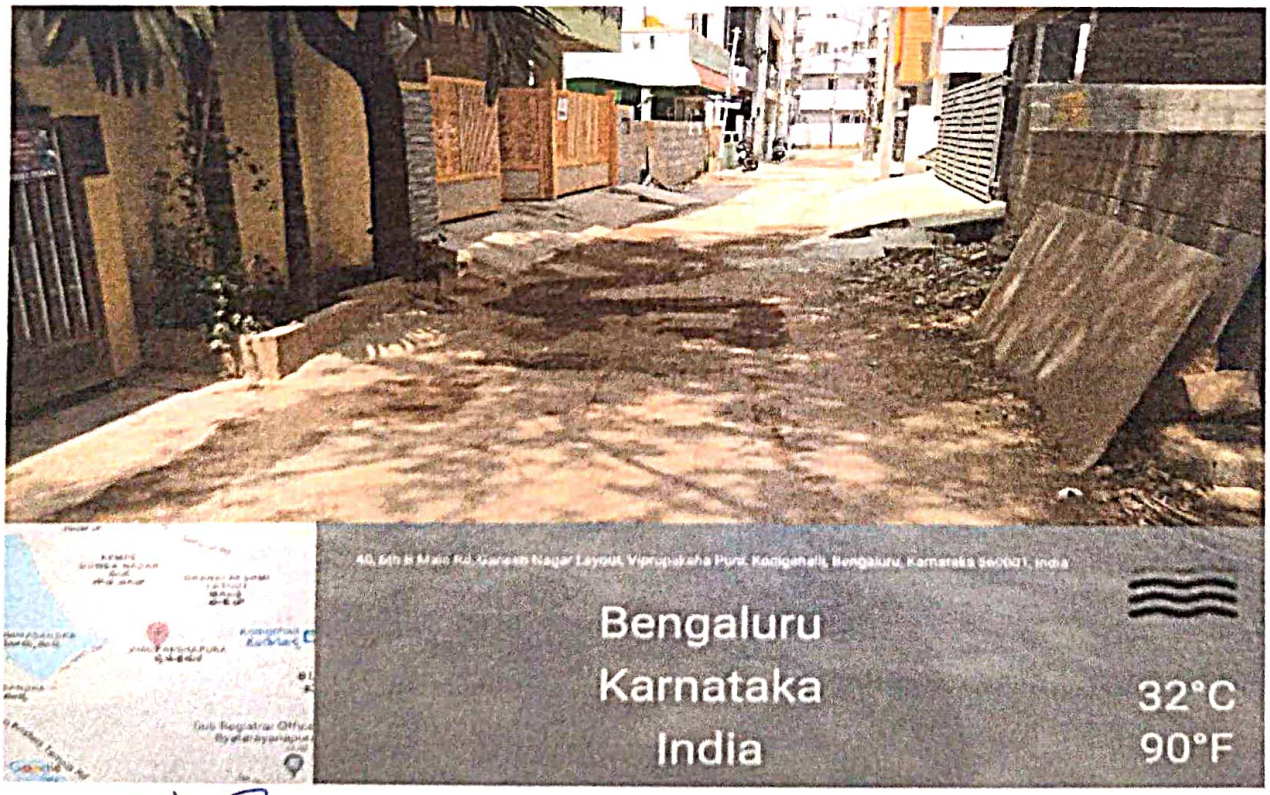
Name of Work : *Improvements to Roads and Drains at Virupakshapura, Budha Jyothi Layout, Kodigenahalli, Maruthi Layout and Surrounding Areas in Ward No.09,Vidyaranayapura.*





RUDRAPRASAD CONSULTANTS
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Name of Work : *Improvements to Roads and Drains at Virupakshapura, Budha Jyothi Layout, Kodigenahalli, Maruthi Layout and Surrounding Areas in Ward No.09, Vidyaranayapura.*

RUDRAPRASAD CONSULTANTS
BANGALORE

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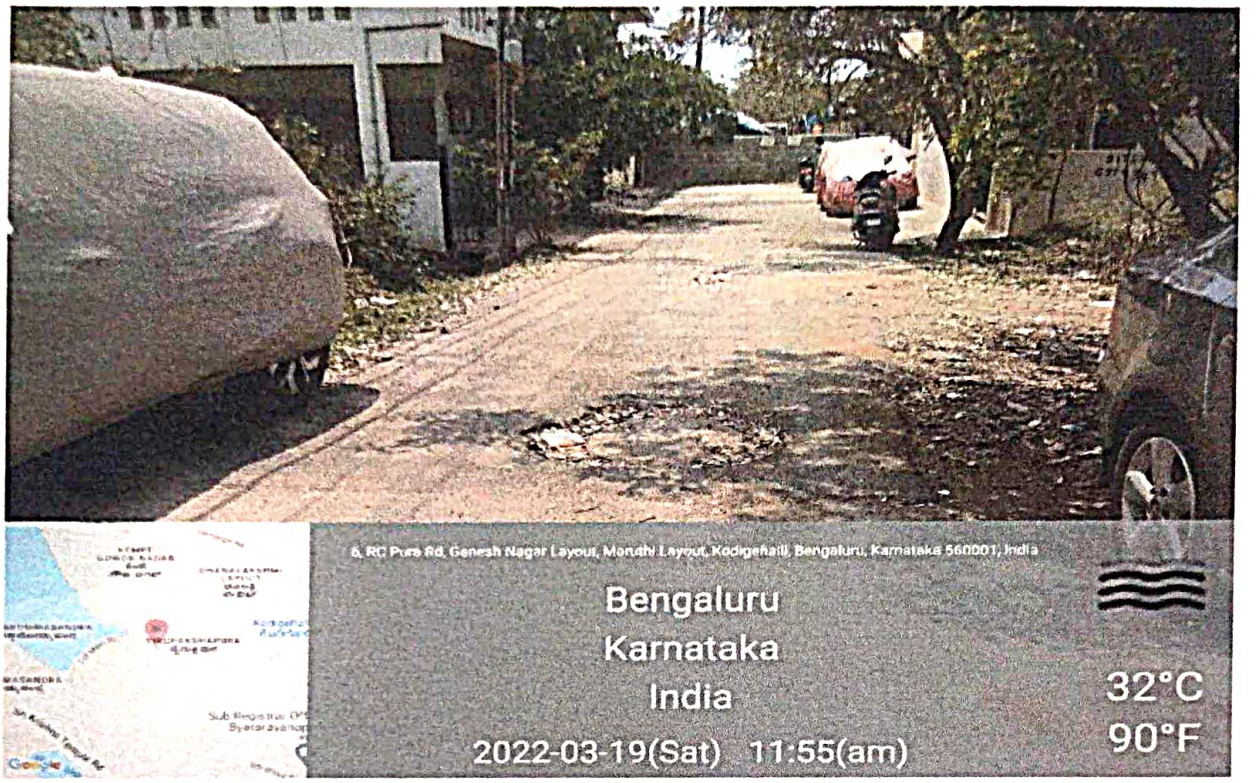
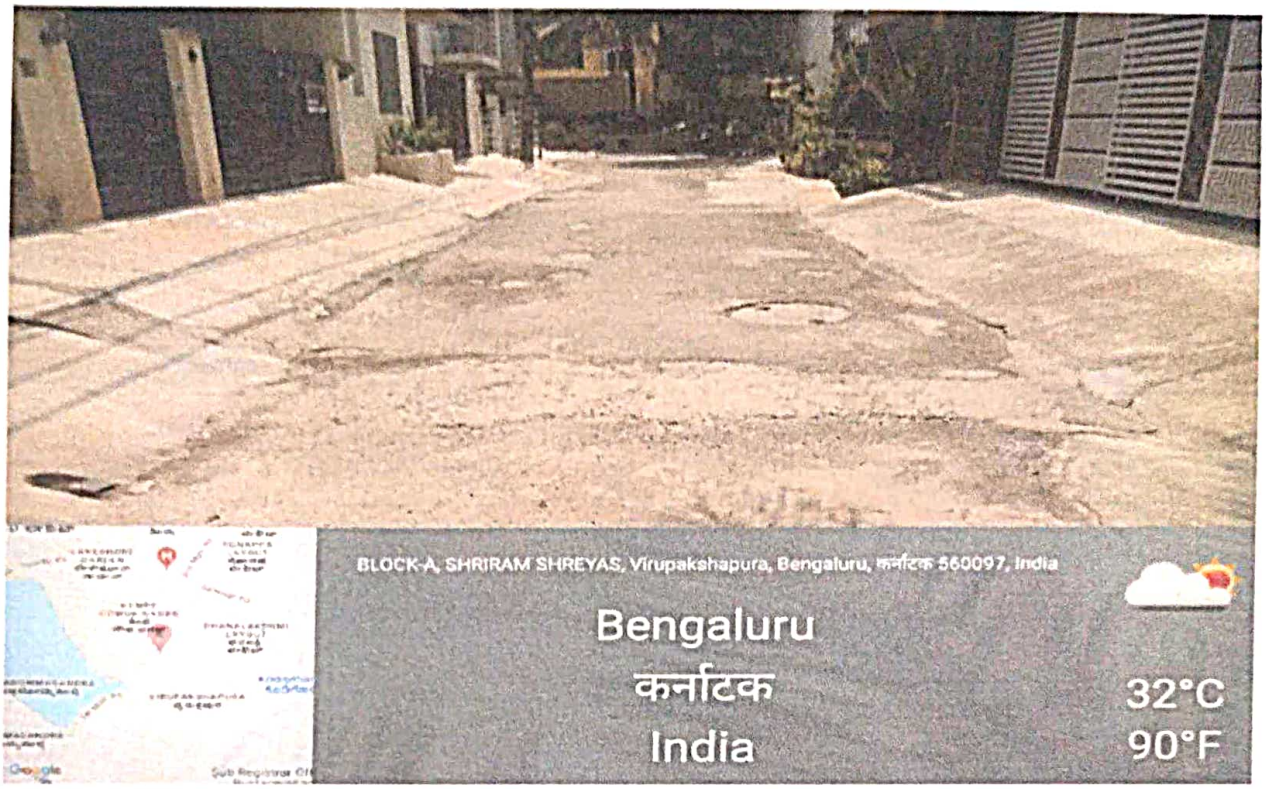
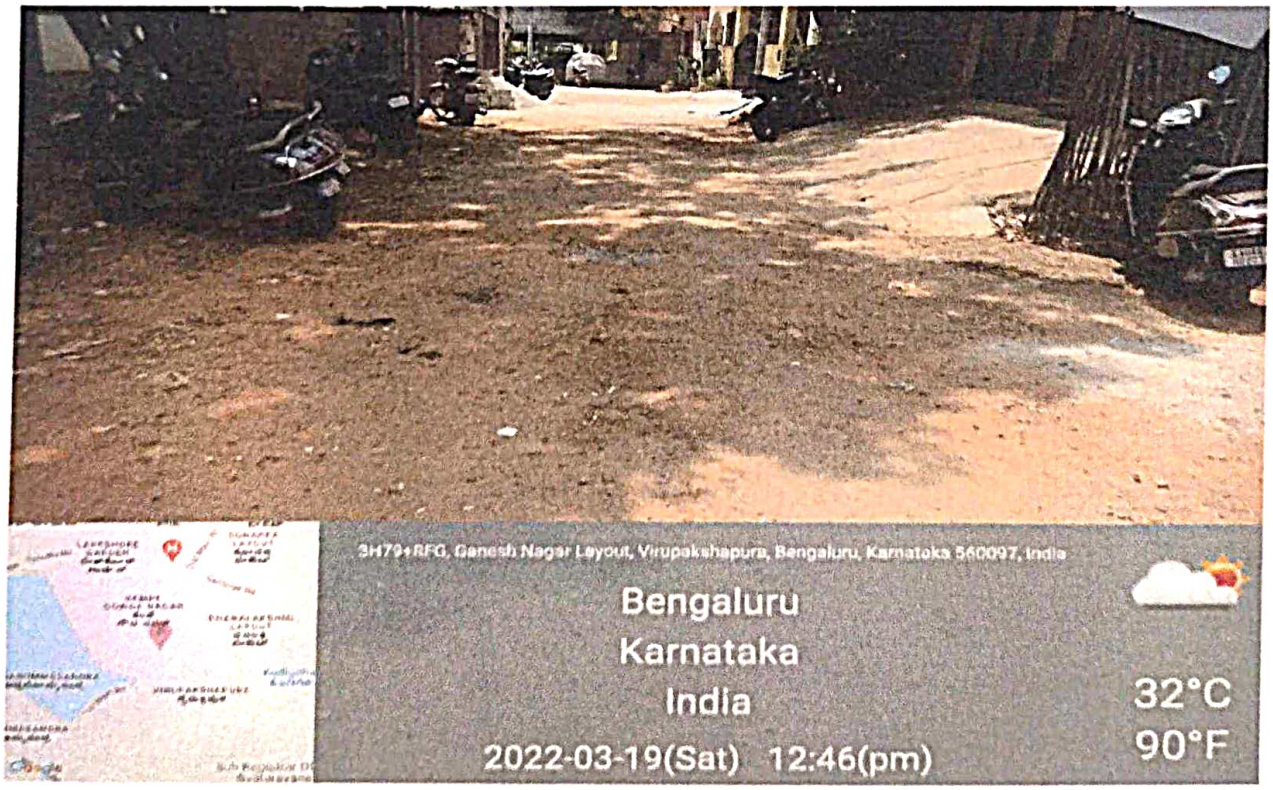


RUDRAPRASAD CONSULTANTS BANGALORE

Name of Work : *Improvements to Roads and Drains at Virupakshapura, Budha Jyothi Layout, Kodigenahalli, Maruthi Layout and Surrounding Areas in Ward No.09,Vidyaranayapura.*





RUDRAPRASAD CONSULTANTS BANGALORE

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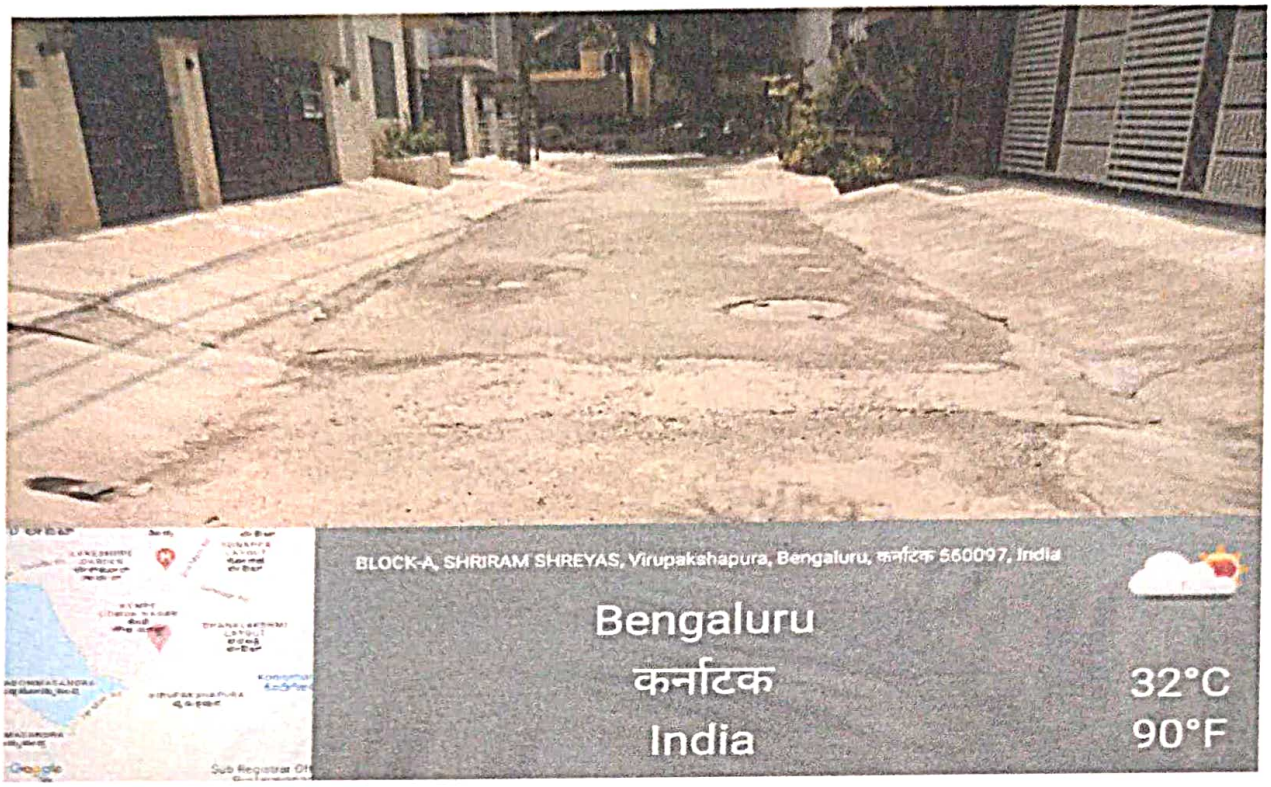

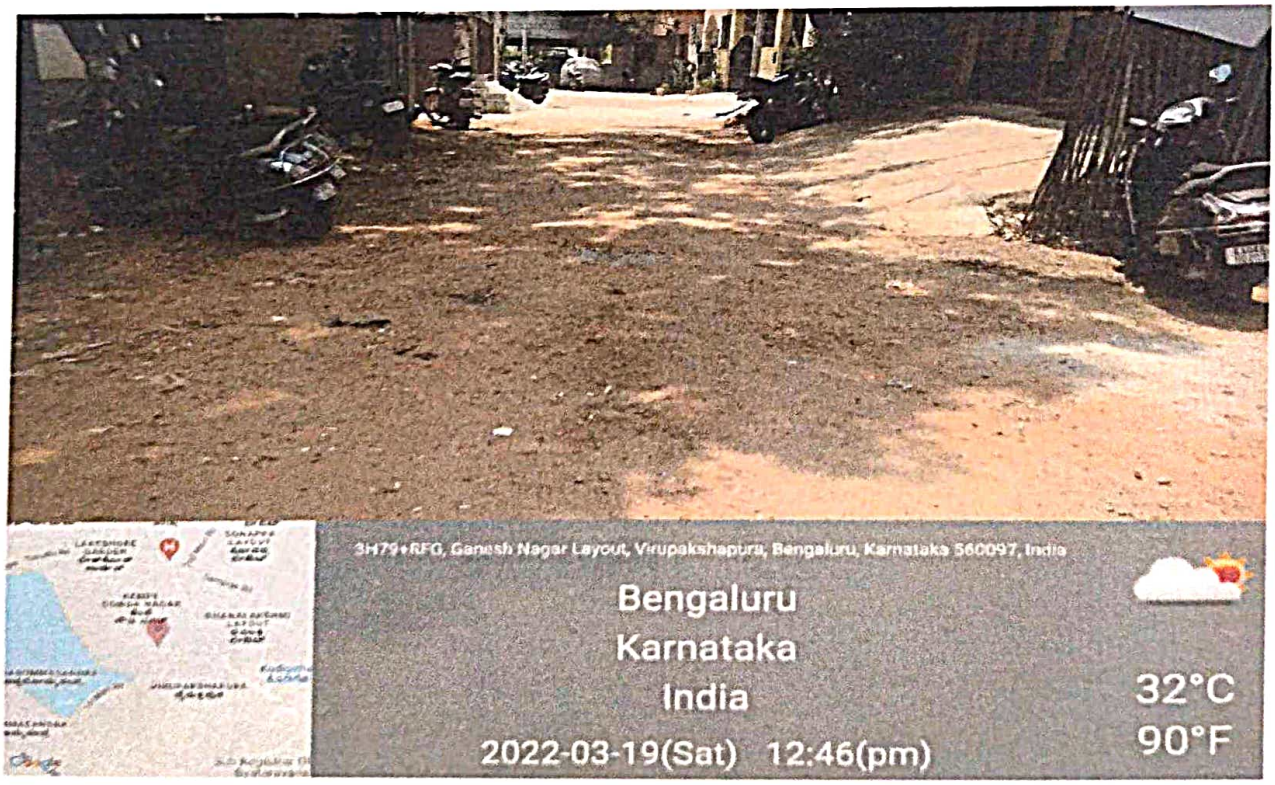

RUDRAPRASAD CONSULTANTS BANGALORE

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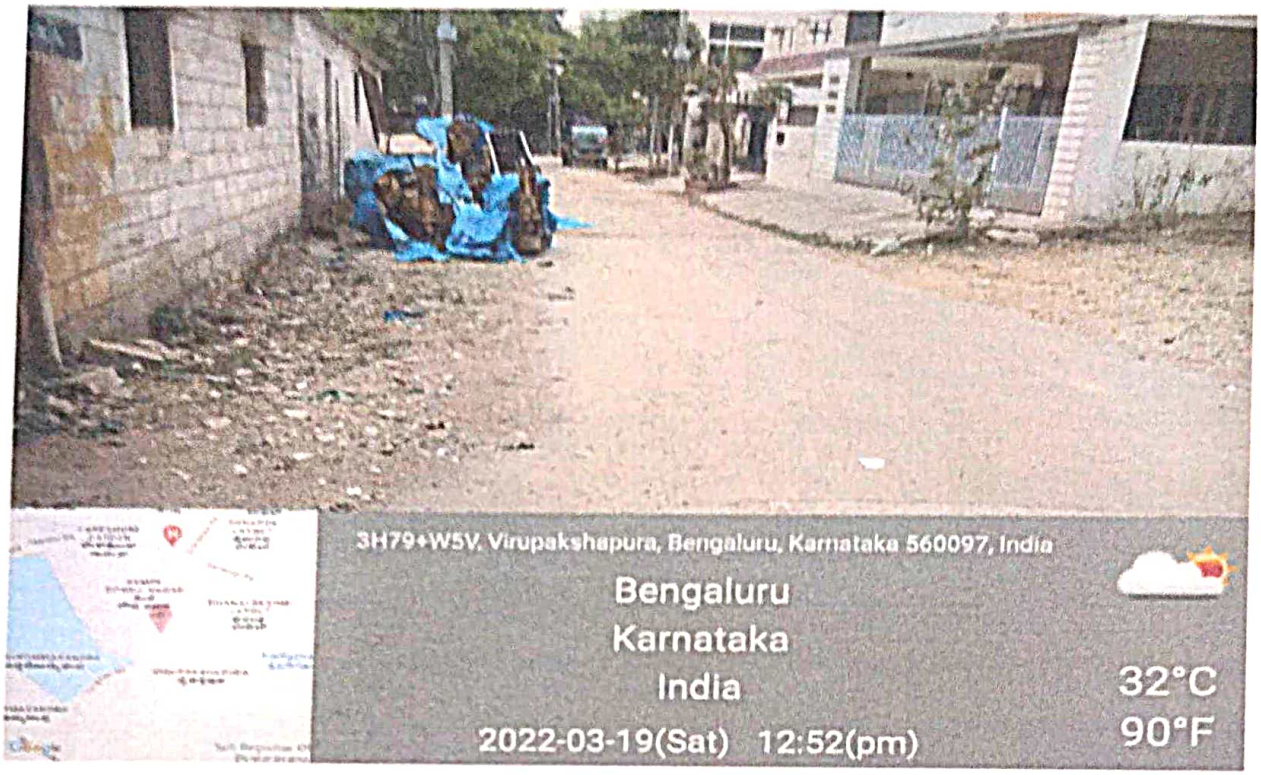
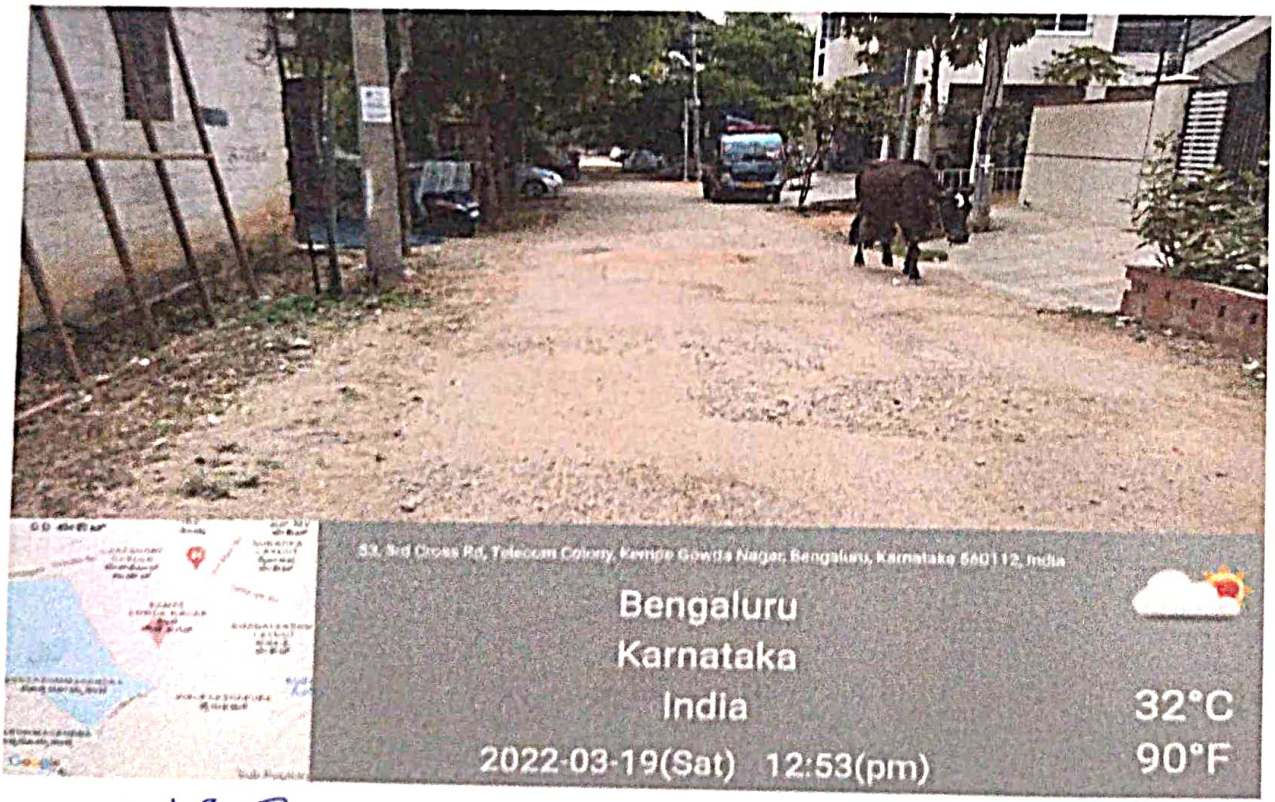


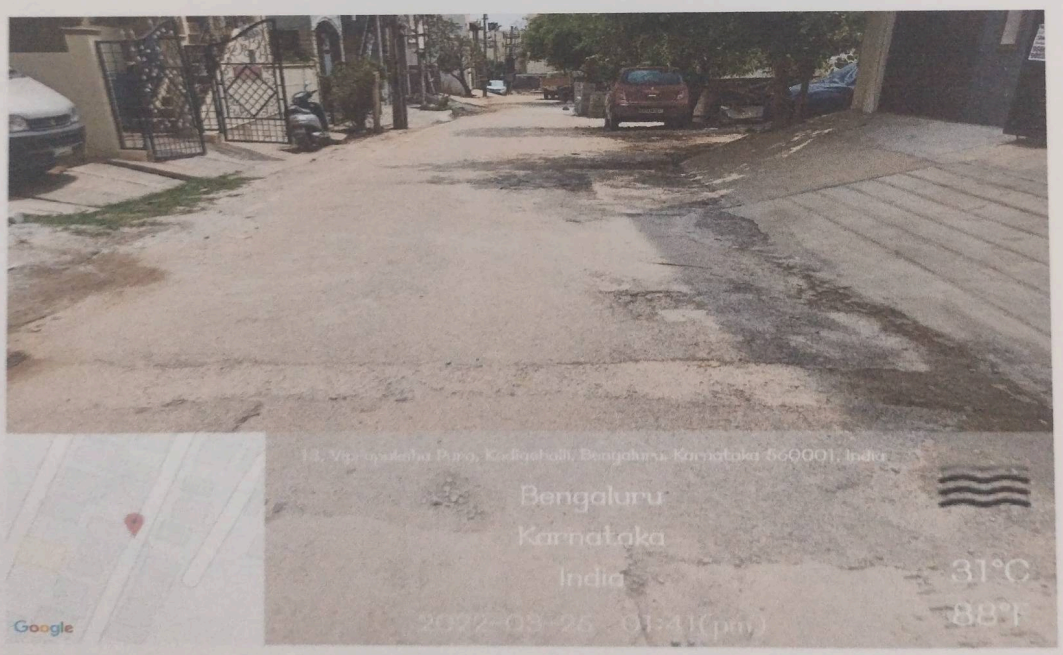


PRASAD CONSULTANTS
BANGALORE

Name of Work : *Improvements to Roads and Drains at Virupakshapura, Budha Jyothi Layout, Kodigenahalli, Maruthi Layout and Surrounding Areas in Ward No.09, Vidyaranayapura.*

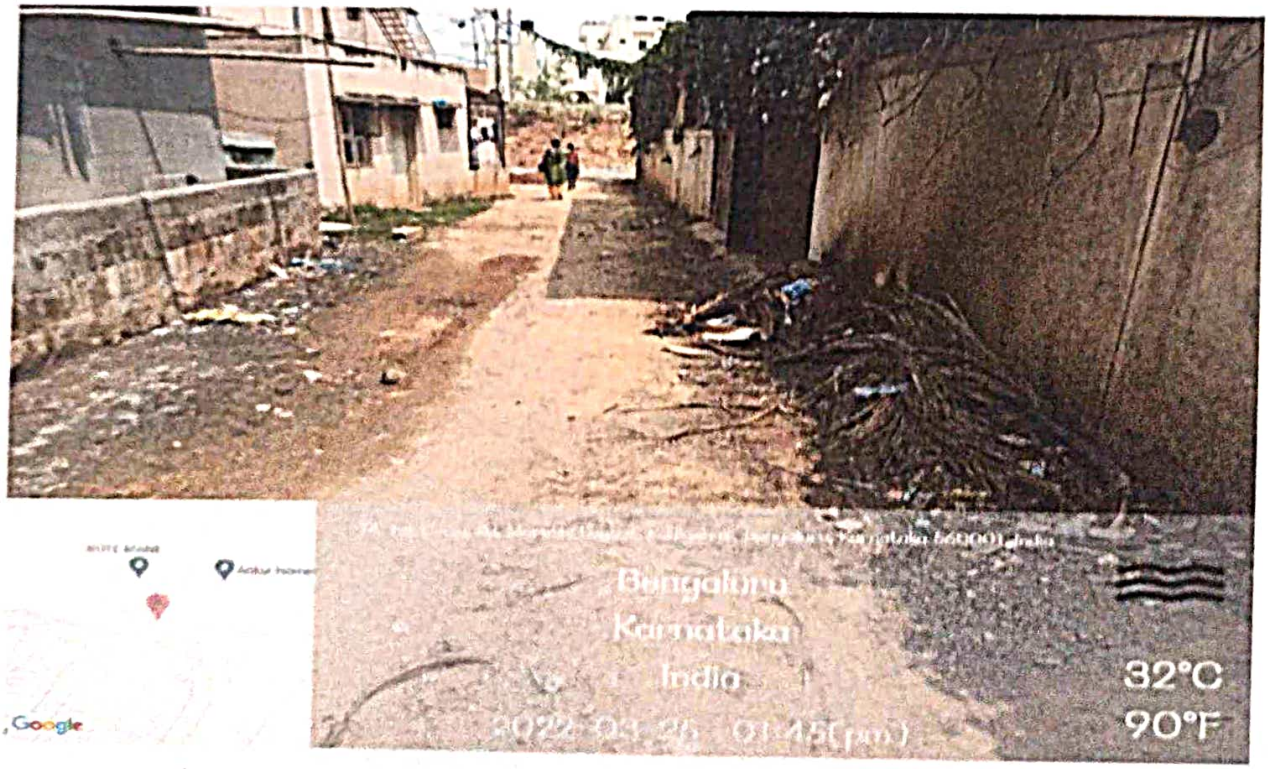
PRASAD CONSULTANTS

Name of Work : *Improvements to Roads and Drains at Virupakshapura, Budha Jyothi Layout, Kodigenahalli, Maruthi Layout and Surrounding Areas in Ward No.09, Vidyaranayapura.*



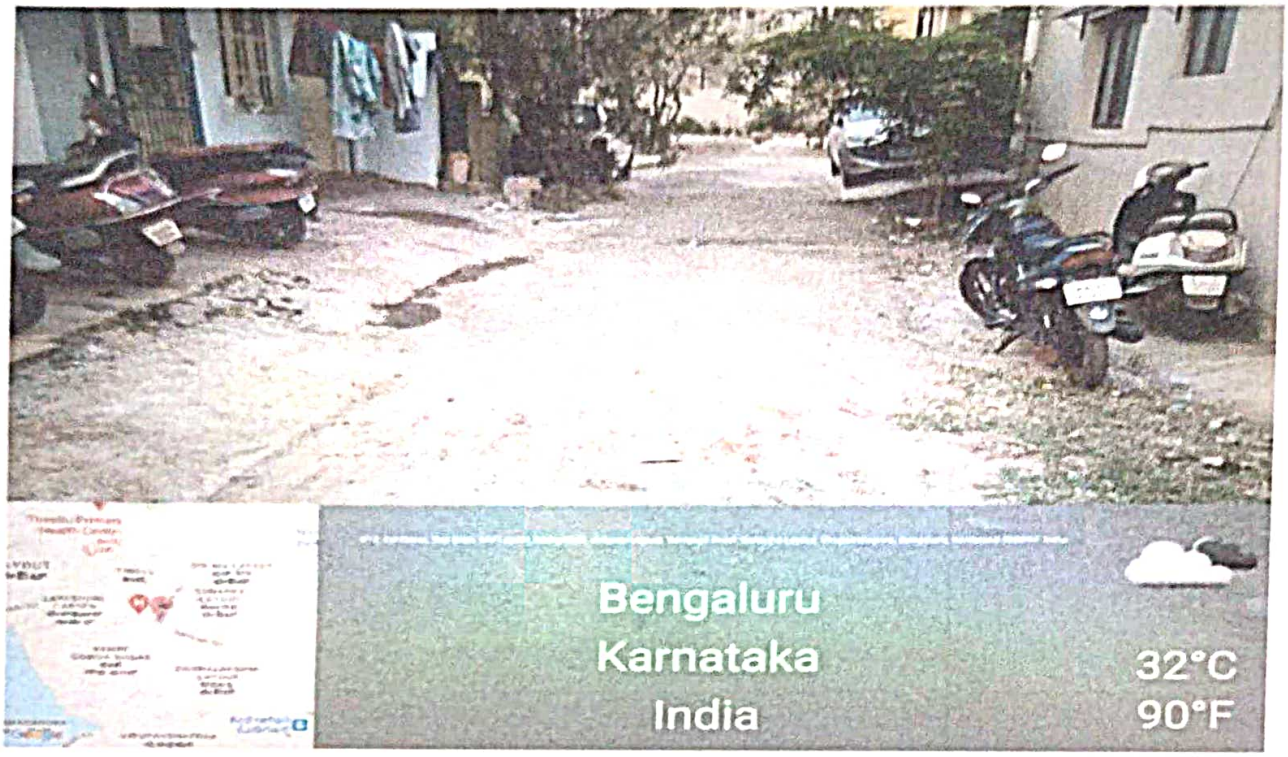
PRASAD CONSULTANTS BANGALORE

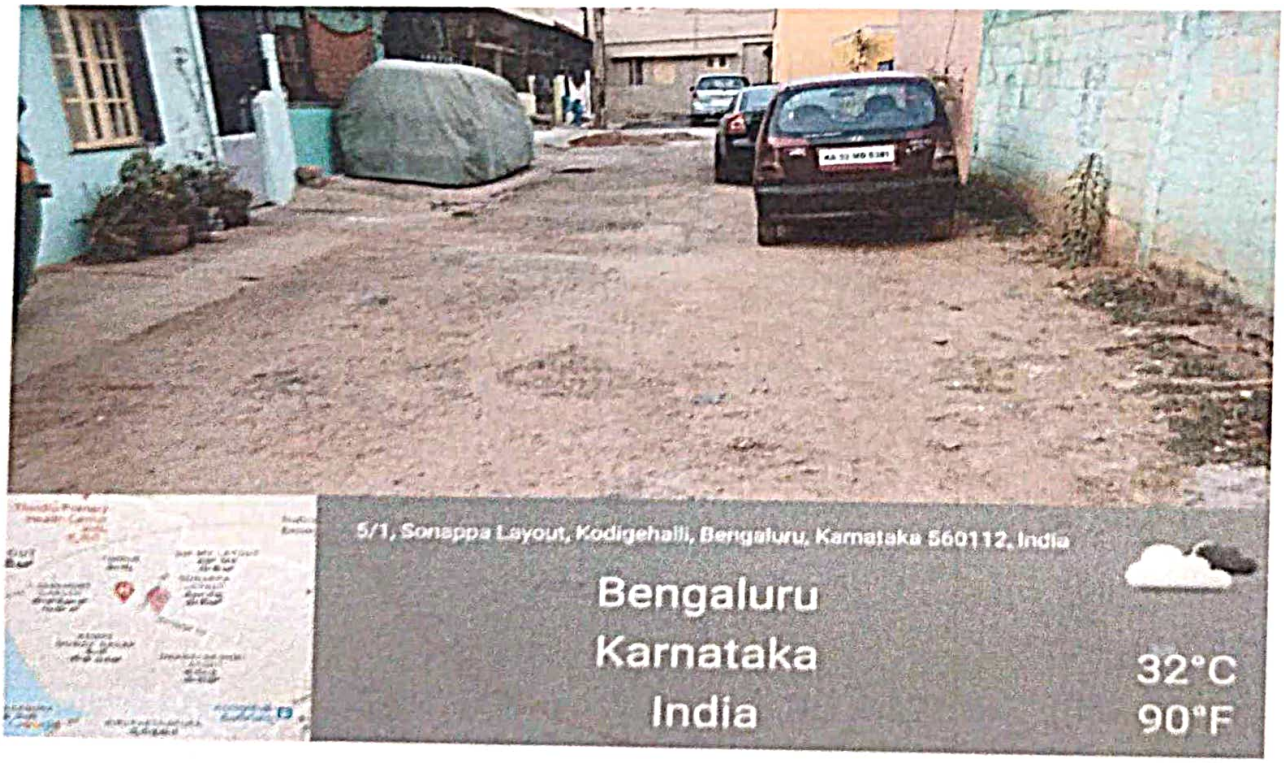
Name of Work : *Improvements to Roads and Drains at Virupakshapura, Budha Jyothi Layout, Kodigenahalli, Maruthi Layout and Surrounding Areas in Ward No.09,Vishvaramayapura.*



RUDRAPRASAD CONSULTANTS BANGALORE

Name of Work : Improvements to Roads and Drains at Virupakshapura, Bhudha Jyothi Layout, Kodigehalli, Maruthi Layout and Surrounding Areas in ward No.09, Vidyaranayapura





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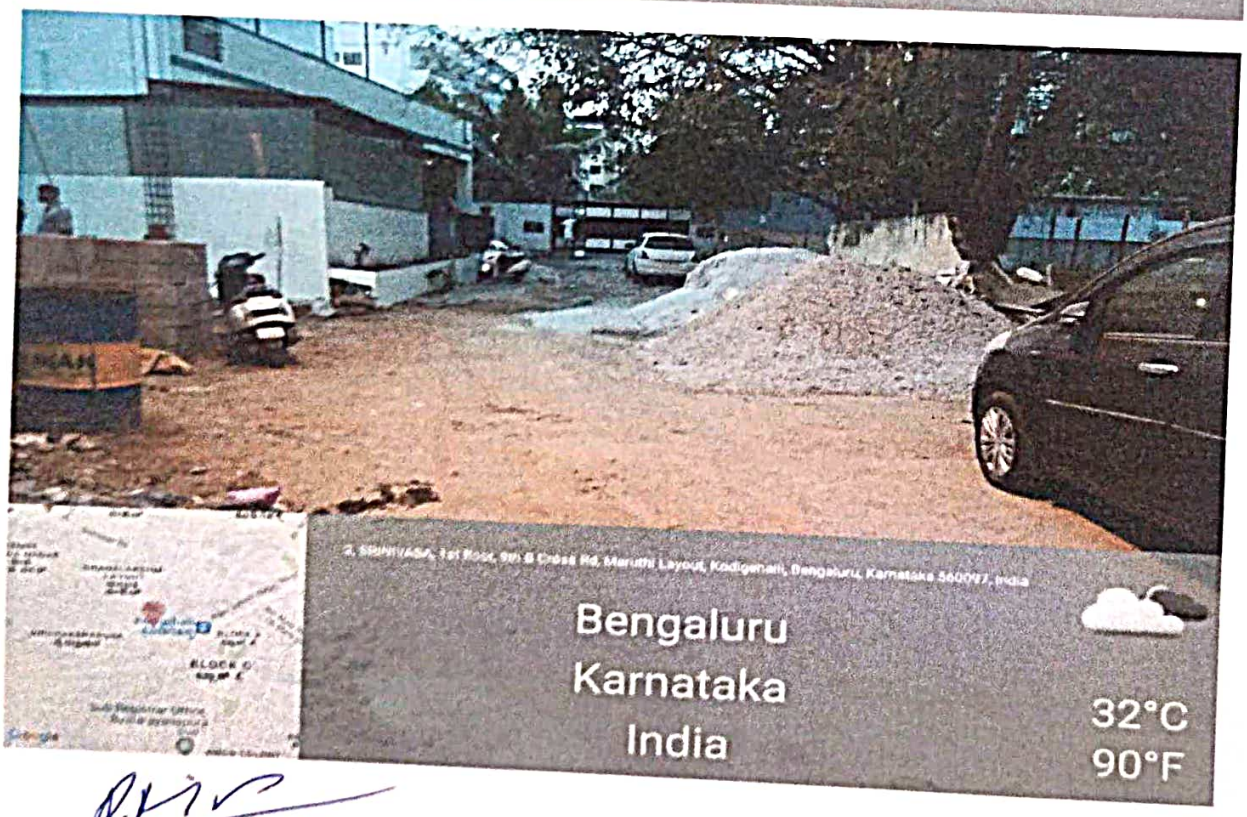

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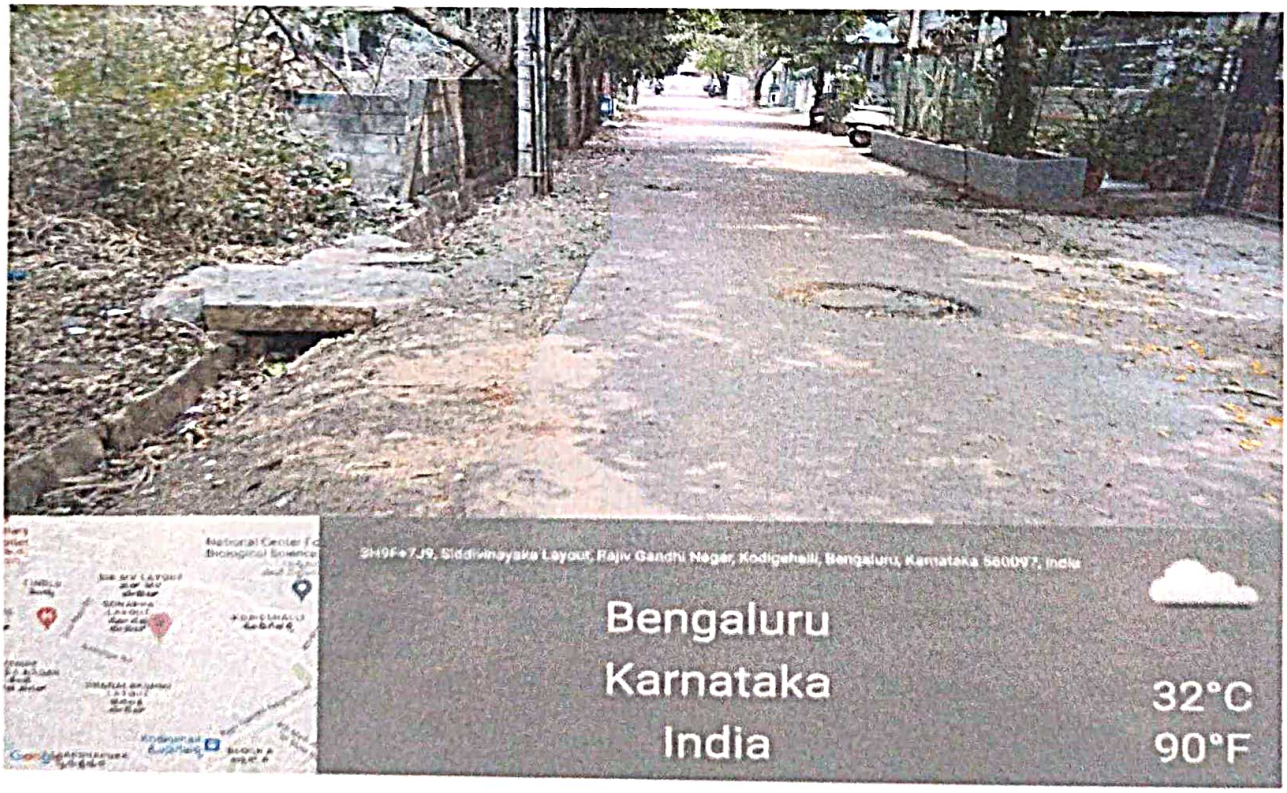

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RUDRAPRASAD CONSULTANTS
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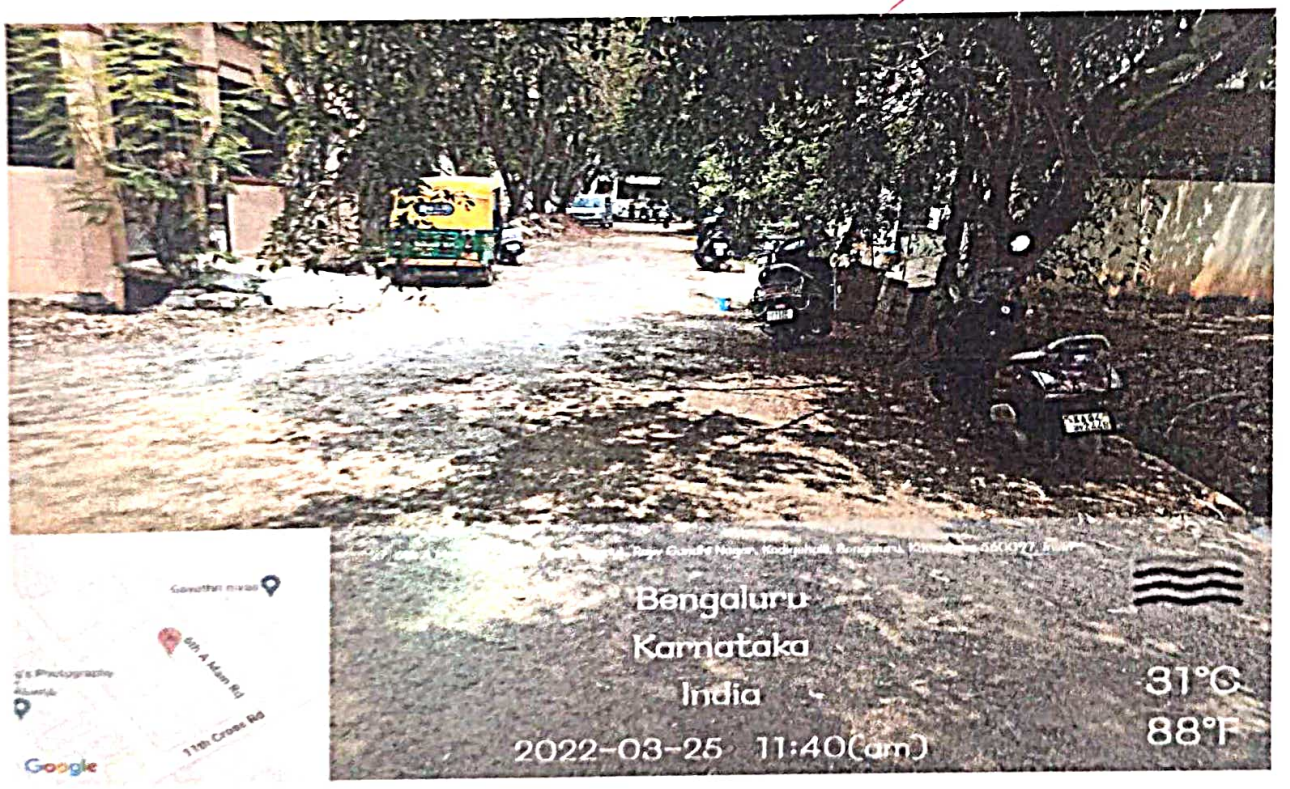

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RUDRAPRASAD CONSULTANTS BANGALORE

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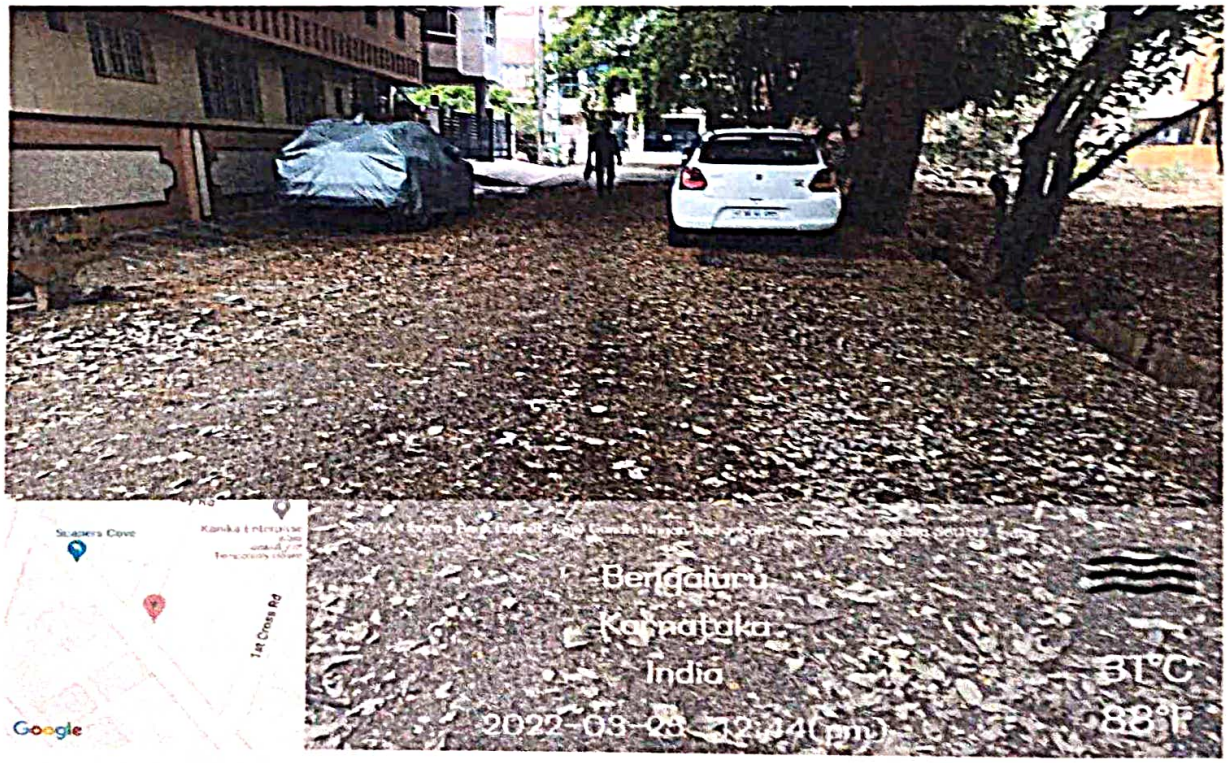


RUDRAPRASAD CONSULTANTS
BANGALORE

WARD MAP

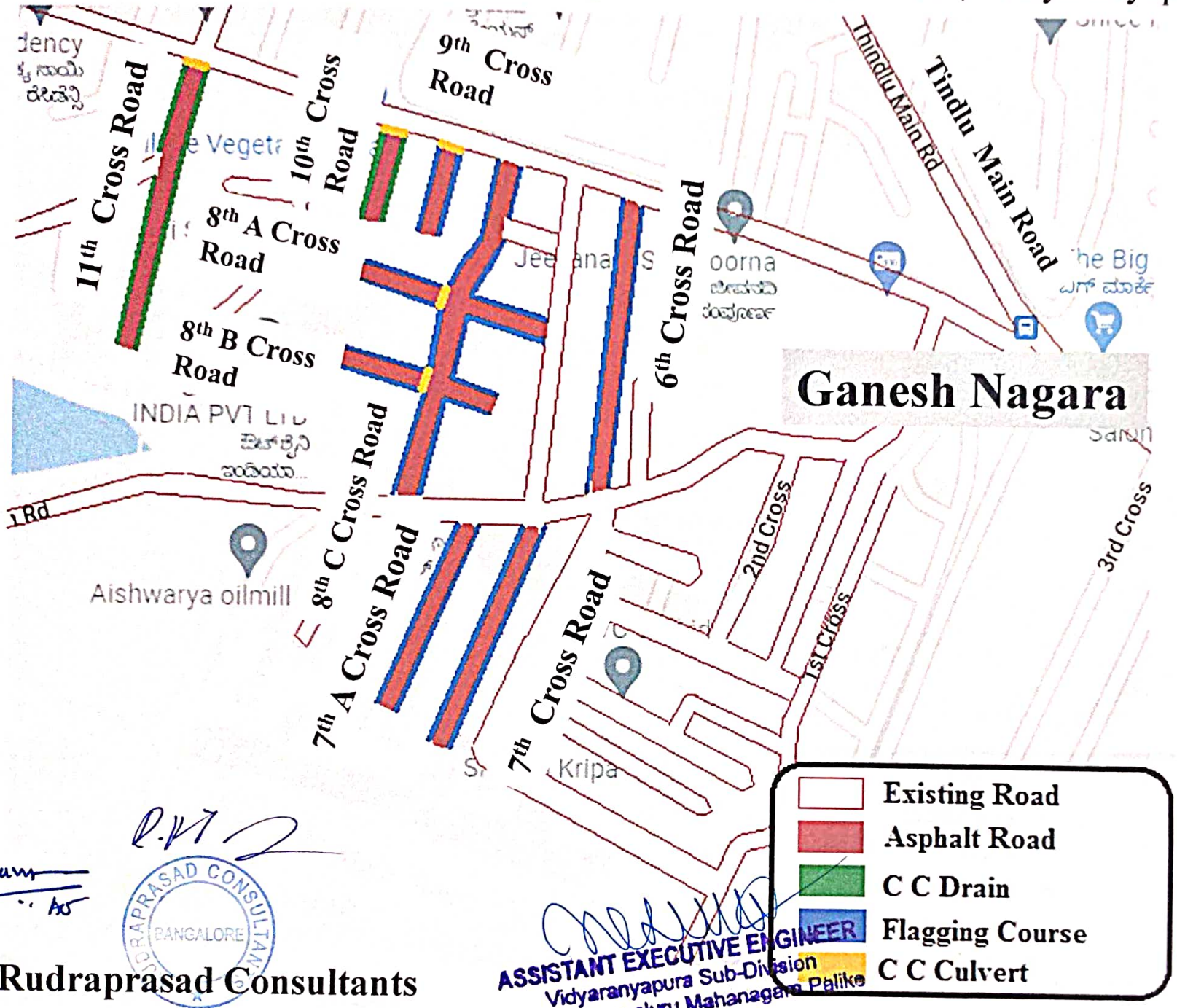
BRUHAT BENGALURU MAHANAGARA PALIKE

9-VIDYARANYAPURA

RUDRAPRASAD CONSULTANTS BANGALORE

KEY MAP

Improvements to Roads and Drains at Virupakshapura , Bhudha Jyothi Layout Kodigenahalli , Maruthi Layout and Surrounding Areas in Ward No. 09 , Vidyaranyapura



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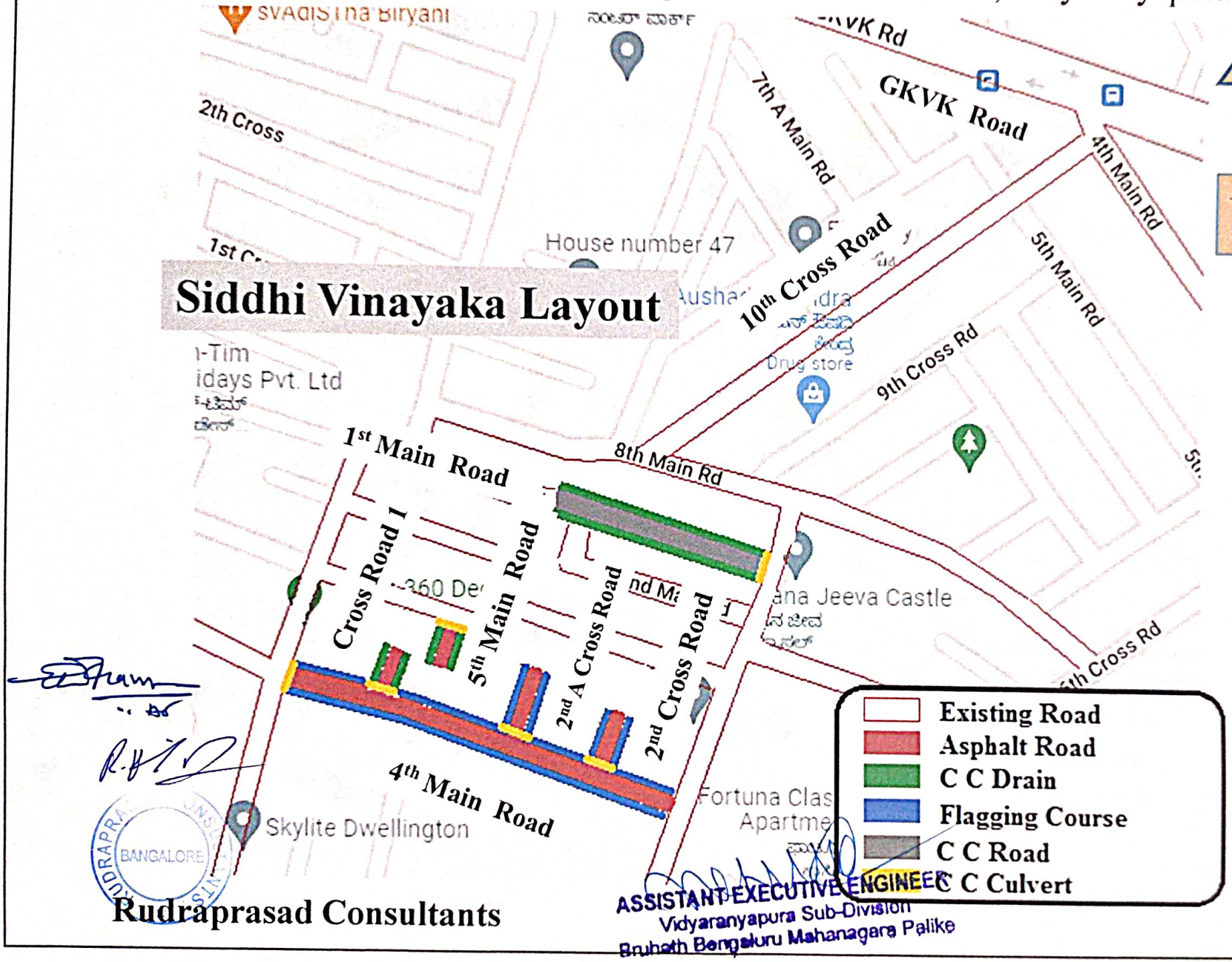
ASSISTANT EXECUTIVE ENGINEER
Vidyaranyapura Sub-Division
Bruhath Bengaluru Mahanagara Palike

Improvements to Roads and Drains at Virupakshapura, Bhudha Jyothi Layout Kodigenahalli , Maruthi Layout and Surrounding Areas in Ward No. 09, Vidyaranyapura



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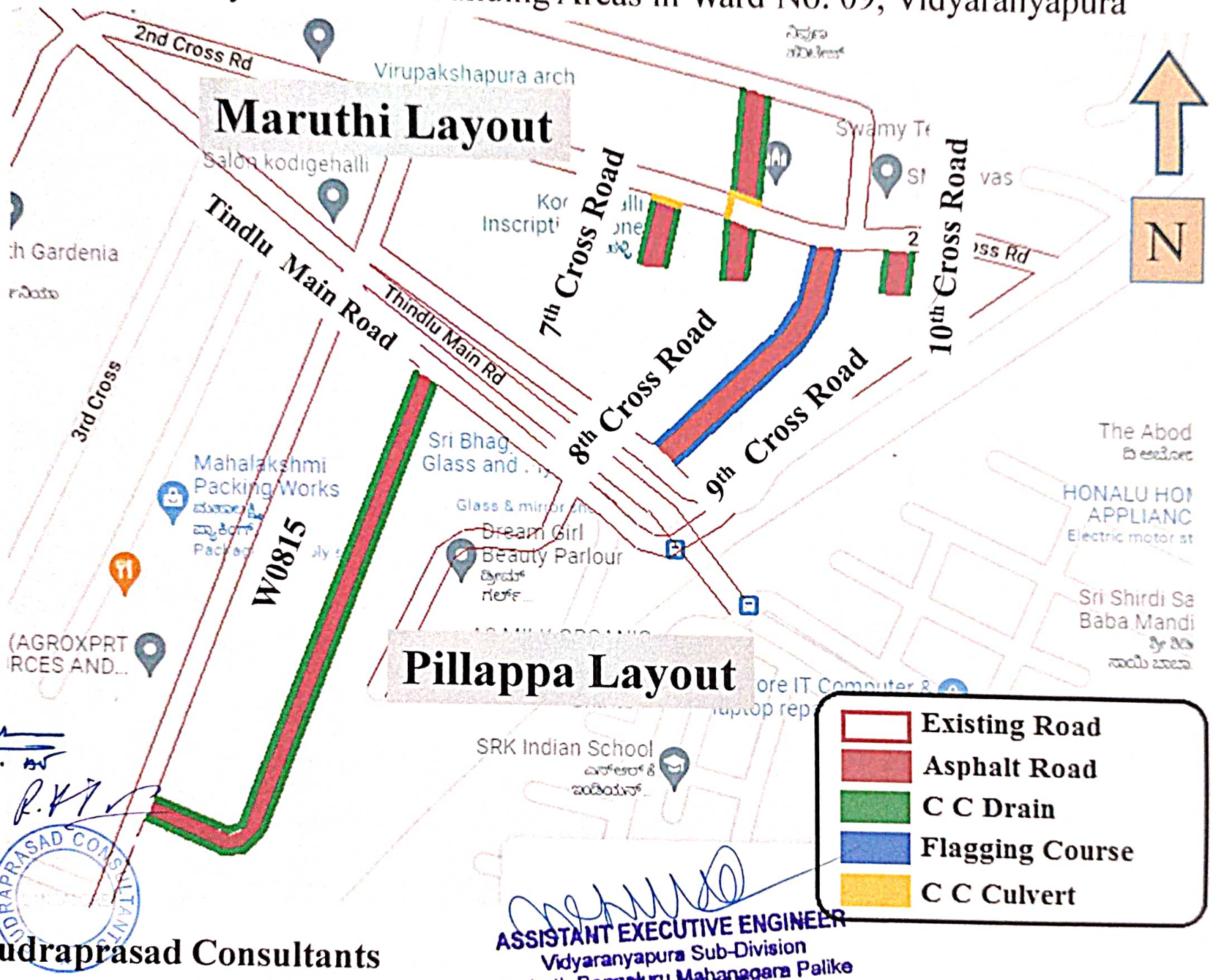
Vidyaranyapura Sub-Division
Bruhath Bengaluru Mahanagara Palike

Improvements to Roads and Drains at Virupakshapura, Bhudha Jyothi Layout Kodigenahalli , Maruthi Layout and Surrounding Areas in Ward No. 09, Vidyaranyapura



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Vidyaranyapura Sub-Division
Bruhath Bengaluru Mahanagara Palike